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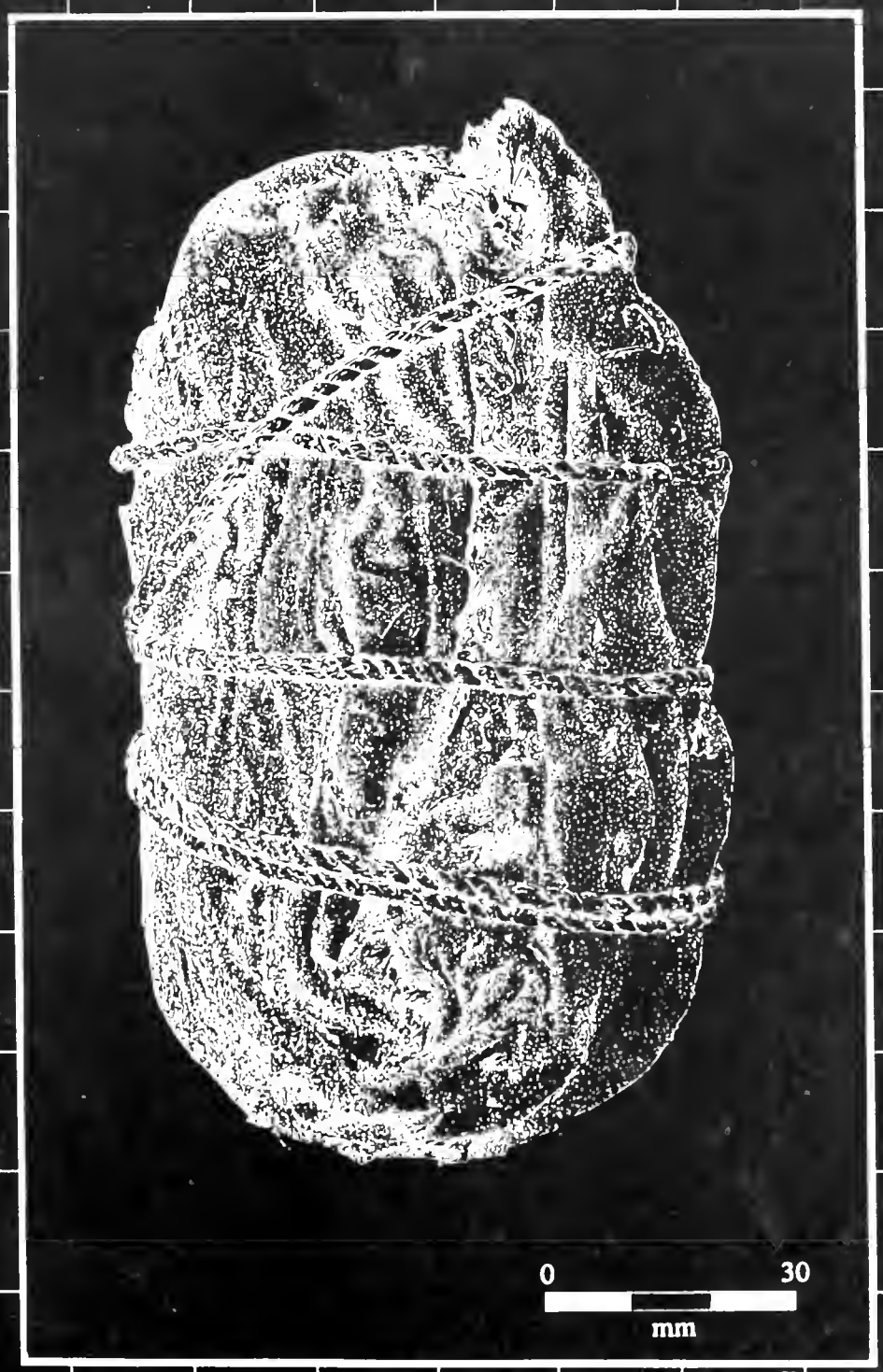

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The aim of *Southern African Field Archaeology* is to communicate basic data to professional archaeologists and the public.

Manuscripts of original research undertaken in southern Africa will be considered for publication. These may include reports of current research projects, site reports, rock art panels, rescue excavations, contract projects, reviews, notes and comments. Students are encouraged to submit short reports on projects. Southern African Field Archaeology also welcomes general information on archaeological matters such as reports on workshops and conferences.

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Logo
Decorated pot from an Early Iron Age site in the Great Kei River valley, eastern Cape, and a painting of a 'trance figure' from the same region.

Cover illustration
Leather bundle bound with string from Faraoskop Rock Shelter, south-western Cape, p. 3.

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CONTENTS

OPINIONS

RUBBISH OR TREASURE?

Two main issues are usually raised when archaeologists discuss the destruction of municipal rubbish dumps. Is their loss really a problem? If so, what can we do about it anyway?

Archaeologists have been accurately described as "scientific rag-and-bone merchants...poking around in dead people's garbage" (Bahn 1989:5-7). The town dump, a trash pit in the farmyard and an ash/compost-heap at the end of the garden were all produced as a result of people disposing of the unwanted debris of their daily lives.

In early colonial South Africa, householders did not tidily collect their left-overs and wait for a yellow truck to remove them. Things were thrown out of the kitchen door and scattered by scavenging animals and birds, or thrown into the nearest water course (a habit presumably the legacy of Dutch canal-side life). To find a neatly demarcated rubbish pit near a 17th or 18th century dwelling is most unusual. During the 19th century colonists started to consciously confine and control their rubbish as a result of new ideas about orderliness and cleanliness. In Cape Town only in the 1840s were reports taken seriously about an increasing level of insanitary overcrowded backyard conditions contributing to epidemics as well as offending the noses of the burghers. Much fuss was generated and at least a nominal attempt was made to deal with night-soil. It was also during the 19th century that many smaller towns and villages were established throughout the Cape Colony. Along with the new communities came the new communal rubbish disposal system.

The loss of the resultant town dumps and other large open middens which incorporate tangible evidence from the past is the loss of historical evidence. Community dumps provide type collections against which other local sites can be set, especially if their disposal history is well documented and they retain some stratigraphic integrity. As Garth Sampson has described for Middelburg (1992), the original ash-heap "reflects the entirely unconscious picture of the real life and times of the community"; he regards it as an invaluable source of information for his intensive Seacow Valley project where the distribution of

Staffordshire-manufactured ceramics in particular into the far Colonial interior is poorly documented. But dumps belong in the wider scale, the general community level, and thus do not speak of the behaviour of individual housholds. Without a parallel and intimate understanding of the context of use of the artefacts, all a dump tells us is that certain items were available and consumed in general over a period of time.

Middens and dumps, however, have long been seen as treasure chests available to bottle-hunters and hobbyists to explore and exploit. Ethleen and Al Lastovica are possibly the best known collectors in South Africa, because of the excellent reference book they have published (1990). According to them, "[i]n South Africa, small dumps which yield bottles come to light from time to time, but many items owned by bottle collectors throughout the country were unearthed from the extensive dumps at Bellville and Port Elizabeth" (Lastovica & Lastovica 1990:11). Significantly, an amateur bottle-hunter wrote: "It is becoming more and more difficult to find a place to go on "digs". However, in country towns and on farms, there are still unexplored dumps" (Els 1988). That these dumps are already being exploited may be deduced from the increasing number of glass bottles and china doll fragments on sale at small antique shops and craft fairs in the rural areas.

Old town dumps are more seriously and increasingly under threat of redevelopment by the town councils themselves because areas once on the fringes of settlements are becoming engulfed by housing estates. A large rubbish dump dating to the mid-19th century was recently bulldozed in Grahamstown, although the archaeological value of a similar midden underlying Huntley Street had already been demonstrated by excavations by the Albany Museum in the 1980s (Jeppson 1989). One of the remaining pre-1900 dumps in Cape Town lies in the middle of Rondebosch, but is protected more by the plants that overlie it than its intrinsic archaeological value.

Unfortunately, archaeological excavation is becoming increasingly expensive. It is not good enough to moan about the destruction of valuable historic resources without offering to do the work involved. Even if the land-owners are persuaded to foot part of the bill (National Monuments Council 1992), where are the remaining means of investigating those sites under threat? How can digging a dump be justified when other sites are equally important or threatened? Archaeology by and for the community concerned is probably the answer. In Europe and North America amateur archaeologists or members of conservation societies do excavation under professional supervision. Do we have these skills available here yet? Who is to organise and train such people? The Middelburg project was an admirable demonstration of "a different way of recovery", using local and imported student labour. But, how can other sites be tackled without a similar huge expenditure of the scarce resources of money, supervisory personnel and time? Individual researchers have successfully forged a team of amateur archaeologists together for certain projects, but can we always tie community excavations into someone's research interests?

If dumps are a matter of concern, how can their value be expressed? Protection would not seem to require more legislation, as town dumps and other middens can be defined as potential historical sites and protected accordingly (National Monuments Council 1992:1). Rather, the idea that dumps are archaeological sites requiring professional archaeological assessment if under threat needs to be established, and local public and council interest needs to be stimulated through education and cavassing.

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A REPORT ON THE EXCAVATIONS AT FARAOSKOP ROCK SHELTER IN THE GRAAFWATER DISTRICT OF THE SOUTH-WESTERN CAPE*

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ABSTRACT

The results from excavations at Faraoskop Rock Shelter in the south-western Cape are described. The site was occupied during the late Pleistocene and again during the mid to late Holocene. The bulk of the deposits date from the late Pleistocene occupation and are separated from the later deposits by a hiatus of some 6000 years. The changes in the role of the site through time are examined using the artefactual and faunal assemblages and comparisons are drawn with similar sequences in the south-western Cape. Attention is given to the special finds and to the 12 human burials recovered from the site.

INTRODUCTION

Background

The excavations at Faraoskop Rock Shelter began as a rescue operation, prompted by a report from Dr J. Deacon of the National Monuments Council that a large number of human skeletons had been removed from a cave in the Graafwater district. When the exact location of the rock shelter was finally established a preliminary excavation was undertaken by Lita Webley and myself in 1987. Our objectives were to assess the state of damage at the site, establish the basic chronological sequence of the deposits and, if possible, learn something of the context of the human burials previously removed from the shelter. Although the shelter floor had been subjected to a series of informal diggings the site had obvious potential and a more extensive excavation was carried out the following year by Royden Yates and myself.

Site details

Faraoskop Rock Shelter (32.07.31S; 18.36.52E) is situated on the koppie of the same name 3 km NNE of Graafwater (Fig. 1). The rock shelter is located on the boundary line between the farms Hoekfontein and Melkbosfontein. The actual name, Faraoskop, is distinctly unusual and its exact meaning proved elusive. One possibility is that the name refers to a local Khoi person although local opinion favoured the notion that the shape of the koppie resembled the double-crowned head-dress (or pschent) worn by the Pharaohs of ancient Egypt.

Faraoskop Rock Shelter is situated on the highest ridge of the koppie at an altitude of 300 m. It faces west across the coastal plain towards the sea which is clearly visible 30 km away. It commands an exceptional view of the plains which are at an altitude of about 180 m in the vicinity of Graafwater. A small seasonal stream, Peddie's River, flows past the foot of the koppie and joins the Jakkalsrivier just to the south of Graafwater. The Jakkalsrivier is today the only permanent natural water source in the area.

Faraoskop is situationally part of a line of hills and escarpments, running approximately NW/SE, which form an outlying component of the Cape Fold Belt mountains. Geologically they are Table Mountain Group quartzitic sandstone. The extensive coastal plain is composed of sandy soils of Tertiary to Recent origin (Visser & Theron 1973). In terms of vegetation the whole area falls within the fynbos biome whilst Faraoskop is on the boundary zone between dry mountain fynbos and sandy plain fynbos. Karroid shrublands are located to the north of Graafwater (Acocks 1975).

Faraoskop Rock Shelter is 6 m wide, 8 m deep with a maximum height of 4 m at the front of the shelter. There are no rock paintings in the shelter or in the immediate vicinity although numerous rock art sites exist to the south-east of Graafwater where the Jakkalsrivier passes close to the escarpment.

EXCAVATION

The choice of where to excavate was compromised by the fact that the deposits at the back of the shelter had been removed to the level of bedrock and a smaller hole dug

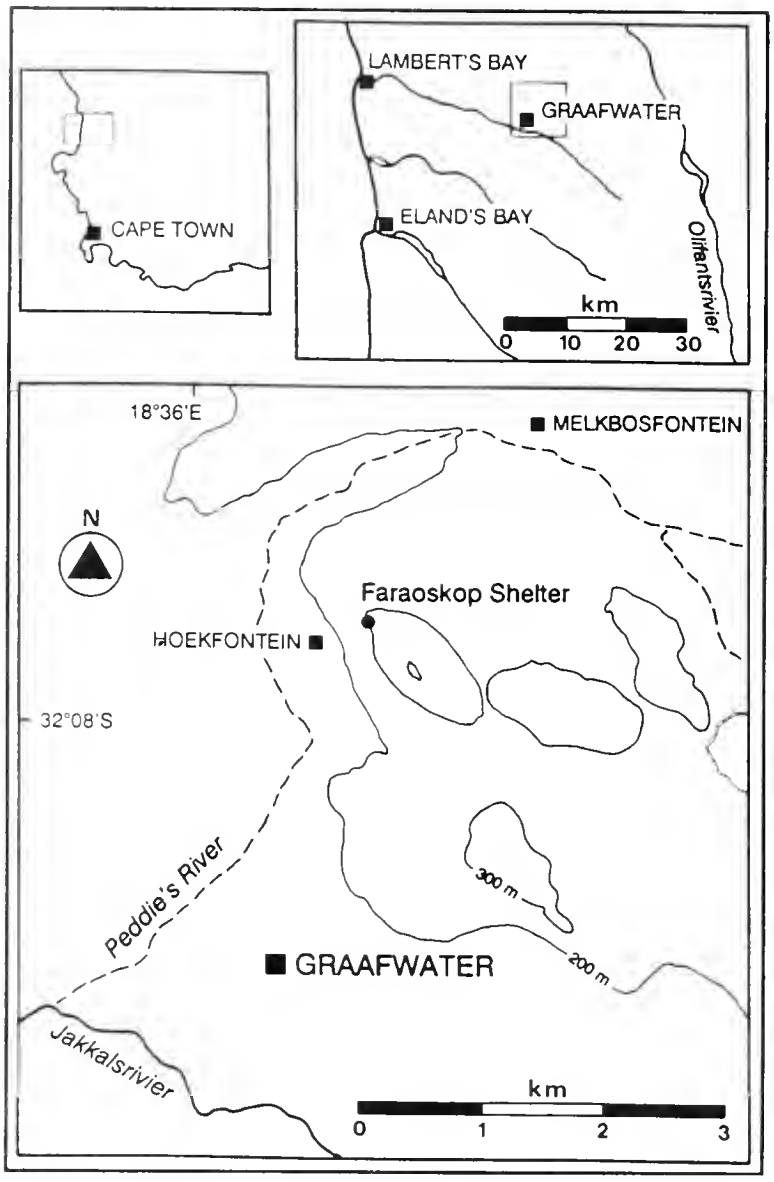

Fig. 1. The location of Faraoskop Rock Shelter in the south-western Cape.

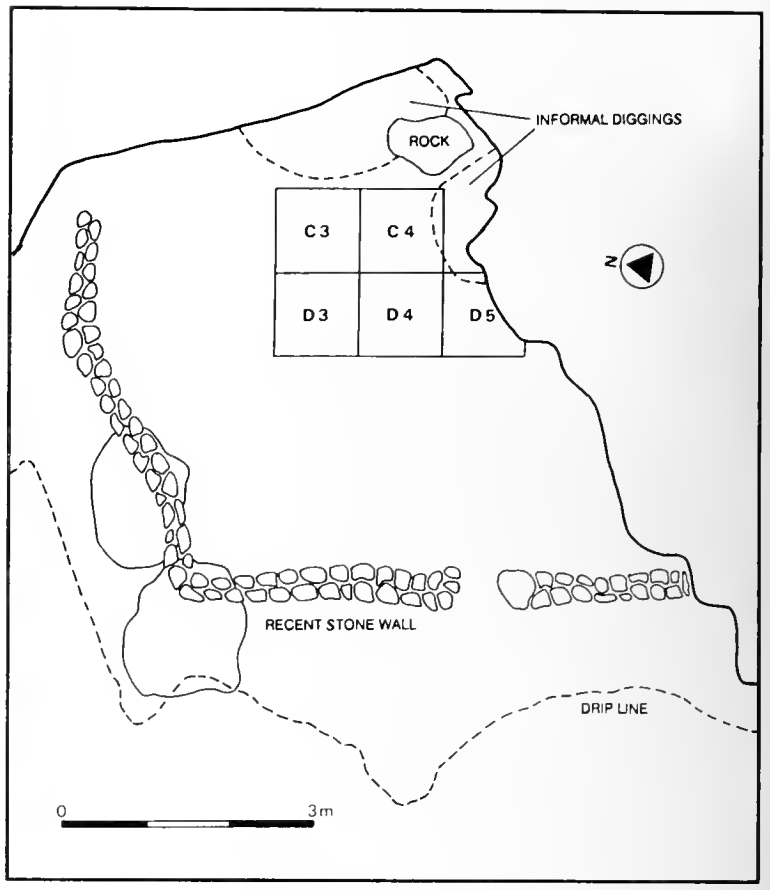

Fig. 2. Faraoskop Rock Shelter: site plan and location of the excavation areas.

next to the southern wall (Fig. 2). Furthermore, the whole surface was in a disturbed condition and material from the holes spread across the floor of the shelter in a series of dumps. Prior to excavating, these were systematically removed and sieved, using a 1 mm mesh sieve, to conserve any cultural material or bone and the excavation undertaken as near as possible to the existing holes.

In all, five square metres were excavated. Two of the squares (C3 & D3) were taken to bedrock with a maximum depth of 0.85 m being reached in square D3. Wherever possible the site was excavated according to the natural stratigraphy except in some of the larger units where 50 mm spits were employed.

A total of twelve human burials were recovered from the site. These included the seven individuals previously removed from the back of the shelter as well as a further five individuals recovered during the 1987 excavation in a partly disturbed context from the hole by the south wall. The site may well contain more human remains, the most likely location being in the north-east corner of the shelter where the back wall overhangs the deposit.

Description of stratigraphy

Five major depositional layers were identified from the excavation. Layer 1 was present in all five squares whilst layer 2 was excavated in all the squares except D5. Layer 3 was almost entirely restricted to square D3 and layers 4 and 5 were only removed from squares C3 and D3, the squares excavated to bedrock. The names of the units are listed in Table 1 with the stratigraphic relationships shown in Figure 3.

Table 1. Names of units.

LAYER 1
Ashy Vegetation (AV)
Brown Ashy Vegetation (BAV)
Base of GAS (BGAS)
Bedding Patch (BP)
Grassy Ashy Soil (GAS)
Grass Patch (GP)
Grass Pit (GPIT)
Loose Sand with Vegetation (LSV)
Vegetation Hearths (VH)
Surface (SURF)
Surface Sand with Hearths (SSH)

LAYER 2
Base of MAC (BMAC)
Basin below MAC (BbMAC)
Brown Ash (BA)
Hard Cream Ash (HCA)
Hearth 4 Cream Ash (H4 (CA))
Hearth 4 Grey Ash (H4(GA))
Light Brown Ash (LBA)
Grass Lining to BbMAC (GL/BbMAC)
Main Ash Concentration (MAC)
MAC Cream (MAC(C))
MAC Hearth 1 (MAC(H1))
MAC Hearth 2 (MAC(H2))
MAC Hearth 3 (MAC(H3))
Top of Brown Ash (TBA)
Vegetation Bone Sand (VBS)

LAYER 3
Consolidated Brown Ash (CBA)

LAYER 4
Ashy Brown Soil (ABS)
Brown Organic Soil (BOS)
Burnt Brown (BB)
Grey Brown (GB)
Loose Grey Soil (LGS)
Orange Brown Soil (OBS)

LAYER 5
Brown Soil (BS)
Dark Brown Soil (DBS)
Mottled Brown Soil (MBS)

Layer 1: had two main components. The uppermost units (Surface and SSH) consisted of a fine reddish sand matrix with areas of charcoal flecked, creamy ash. The underlying units were a mixture of ashy soil and patches of vegetation. Although several small hearths were discernible there were no large ash bodies in layer 1. There was a similar lack of the prominent grass bedding patches which are characteristic of many LSA sites in the

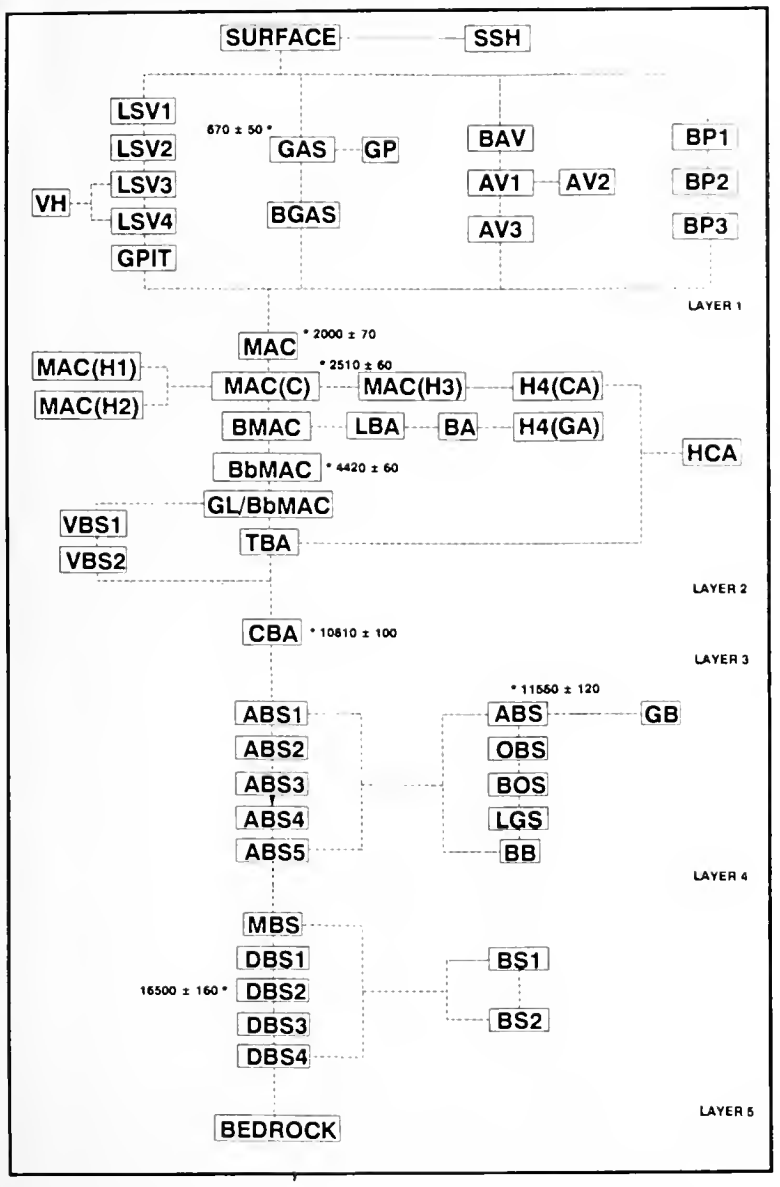

Fig. 3. Faraoskop Rock Shelter: stratigraphic matrix.

south-western Cape occupied during the last 1000 years (Parkington & Poggenpoel 1971, 1987; Kaplan 1987; Nackerdien 1989).

Patches of grass were, however, present in several units, the densest concentration being in Grass Pit in square D5. This was a rather enigmatic feature, full of fine strands of grass in association with wood shavings and other cultural indicators. It had the appearance of a pit but probably owed its origin, at least in part, to animal burrowing. Termite activity was evident in layer 1, particularly in the grass patches. From the presence of nest structures and head capsules the species responsible was identified as *Hodotermes viator* (Mike Picker pers. comm.). Grassy Ashy Soil (GAS) in squares D4/D5 was dated to 670 ± 50 BP (Pta-4811).

Layer 2: consisted almost entirely of a series of predominantly white ash bodies in various stages of consolidation. The uppermost unit (MAC) was a thick white ash body flecked with charcoal which only occurred in squares C3 and C4. It lensed out in these squares and probably reached its greatest concentration in the deposits previously removed from the back of the shelter.

The bulk of the ash deposits in layer 2 were formed by the units MAC(C) and HCA which were more or less equivalent in terms of stratigraphy and composition. They were thick, creamy-white ash bodies containing patches of very hard consolidated ash. There was a fairly arbitrary division between MAC(C) and the underlying BMAC which was also creamy-white in colour but of a softer texture.

The base of the ash complex was formed by a basin of soft grey ash (BbMAC) with a grass lining (GL/BbMAC). The ash complex was separated from layer 3 by a thin layer of grey/brown ashy material (TBA). Charcoal and burnt bone occurred throughout layer 2 and there were a number of discrete hearth units within the ash complex.

Three radiocarbon dates were obtained from layer 2; MAC at 2000 ± 70 BP (Pta-4955), MAC(C) at 2510 ± 60 BP (Pta-4954) and BbMAC at 4420 ± 60 BP (Pta-4809).

Layer 3: consisted of a single unit, Consolidated Brown Ash (Fig. 4a & b). This was an extremely hard grey/brown ash body flecked with charcoal. It was strongly cemented and so compacted that it could only be removed in blocks which were later softened in water. CBA was sharply truncated towards the back of square D3 and appears to have been chopped through by the original inhabitants of the shelter to make way for a new hearth which we excavated as BMAC. CBA is dated to 10 810 ± 100 BP (Pta-4816).

Layer 4: consisted of a set of ashy soil units, generally similar in texture but varying in colour. In square D3 these were excavated as a series of spits (ABS 1-5) which were dark brown in colour at the top of the layer and more orange towards the base. In square C3, units were named separately on the basis of colour but the divisions were fairly arbitrary.

The most prominent feature of layer 4 was the extent to which it had been burrowed by animals (Fig. 5). Numerous burrows were visible going in all directions which added to the complexity of the layer and must have influenced the deposit. This is shown by the various small patches of vegetable matter, often comparatively fresh, probably introduced by burrowing animals (see Robey 1984).

Layer 4 is perhaps best viewed as an unconsolidated ash body considerably churned by burrowing animals. A date of 11 550 ± 120 BP (Pta-4817) was obtained from the unit ABS.

Layer 5: had two basic components. The MBS unit formed a natural break from the overlying ABS units of layer 4 and was a mottled brown soil with patches of white and orange ash. Beneath this there was a darker brown soil (DBS spits) which lacked the ashy patches. The DBS spits of square D3 were roughly equivalent to the BS units of Square C3. Layer 5 was also massively burrowed. A date of 16 500 ± 160 BP (Pta-4822) was obtained from DBS2.

Dating and correlation

Seven radiocarbon dates were obtained from the Faraoskop deposits. Six of these were from *in situ*

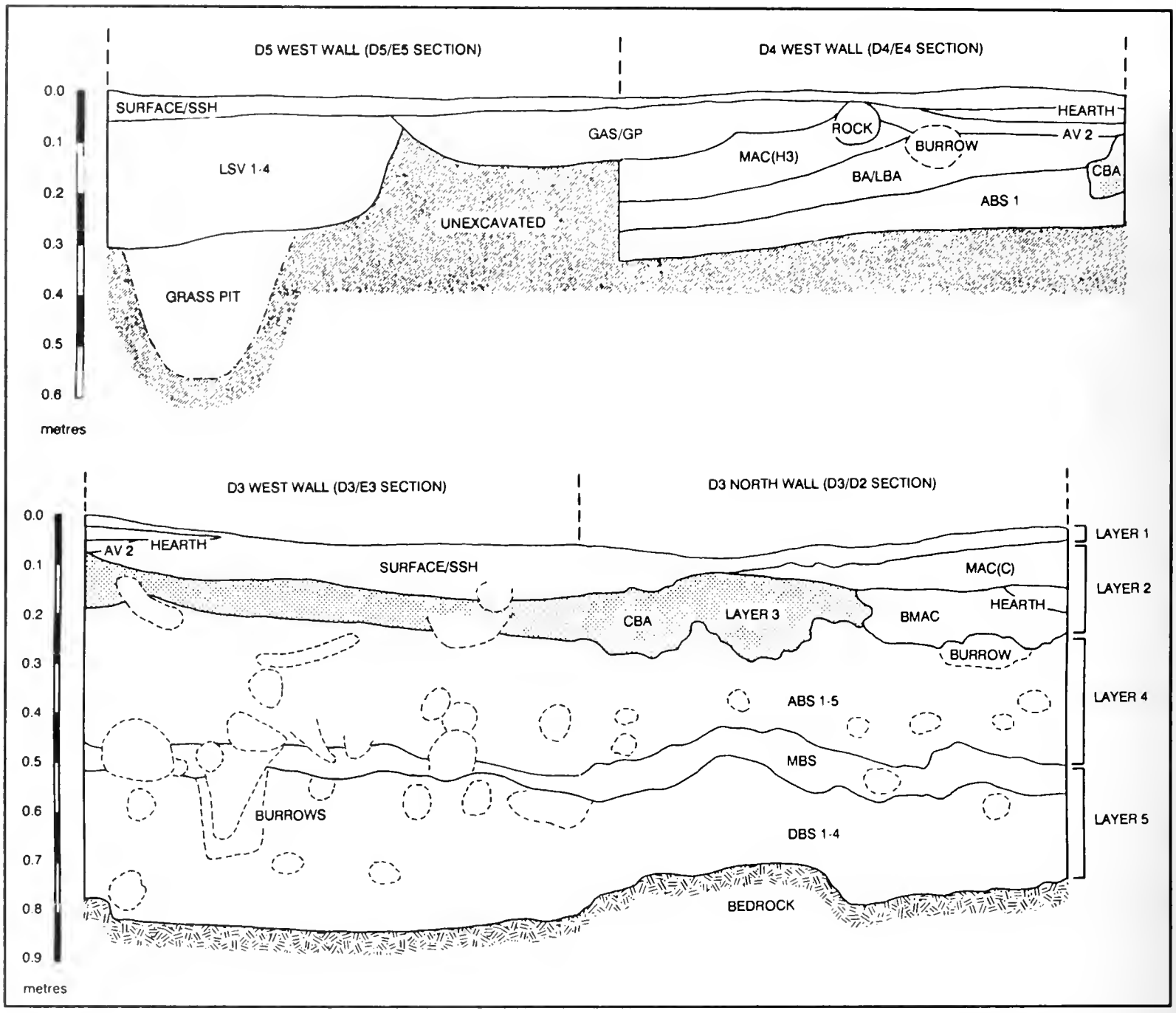

Fig. 4. Faraoskop Rock Shelter. Top: the west-facing sections of squares D5 & D4. Bottom: the west and north-facing sections of square D3.

Fig. 5. Faraoskop Rock Shelter: the west facing section of square D3, showing extensive burrowing.

charcoal samples, the remaining one from grass bedding traces in layer 1. Initially one date was submitted from each layer. This was followed by a further two dates from layer 2 to clarify the sequence of the larger ash bodies. The radiocarbon dates from the excavation are listed in Table 2 with their laboratory numbers.

Obviously this number of dated observations is insufficient to provide a detailed chronology for such a long sequence but a coherent pattern emerged in terms of the stratigraphic layers.

As expected, layer 1 falls well within the last 2000 years with the bulk of the deposits probably belonging to the present millennium. Similar dates have been recorded from a number of Later Stone Age sites in the south-western Cape (Parkington & Poggenpoel 1971; Kaplan 1984; Nackerdien 1989; Anderson 1991; Halkett 1991) and the pattern is by now well established. Other markers which place layer 1 in a recent context include two glass trade beads (from GAS/D4 and BP1/C3) and a small iron bead (from BGAS/D5). Pottery was not common at Faraoskop. Only two sherds were recovered during excavation, one from layer 1 (SSH/D5) and the

Table 2. Radiocarbon dates from the excavation.

Layer	Unit/Square	^{14}C age(years BP)	Laboratory No.
1	GAS/D4-D5	670 ± 50	Pta-4811
2	MAC/C3	2000 ± 70	Pta-4955
2	MAC(C)/D3	2510 ± 60	Pta-4954
2	BbMAC/D4	4420 ± 60	Pta-4809
3	CBA/D3	10810 ± 100	Pta-4816
4	ABS/D3	11550 ± 120	Pta-4817
5	DBS2/D3	16500 ± 160	Pta-4822

other from layer 2 (MAC(H2)/D4) presumably introduced by burrowing animals.

The bulk of the ash bodies in layer 2 belong within the period 2000-2500 BP. This reinforces the evidence from the Klipfonteinrand 2 site (Nackerdien 1989) that large ash concentrations accumulated prior to 2000 BP in the south-western Cape.

There was a clear stratigraphic break between the relatively soft ash complex of layer 2 and the Consolidated Brown Ash (CBA) of layer 3. In terms of chronology this represents a occupational hiatus of some 6000 years (Table 2). A similar hiatus but of shorter duration has been recorded at two other sites in the area. Elands Bay Cave was not visited between about 7900 to 4300 BP (Parkington 1977) while Tortoise Cave had an hiatus of similar dimensions but with a slightly earlier reoccupation date (Robey 1984).

Taken together, layers 3, 4 and 5 represent a period of about 5700 years and in terms of volume, at least two-thirds of the excavated deposit.

CULTURAL ASSEMBLAGES

STONE ARTEFACTS

The classification scheme used here is based on the model proposed by Janette Deacon (1984).

Raw Materials

Table 3 shows the raw material composition of the whole assemblage, Table 4 the stone artefact frequencies and Table 5 the composition of the formal tool component in greater detail. Overall, quartz is by far the dominant raw material at the site with relatively high amounts of silcrete and hornfels followed by smaller quantities of quartzite and cryptocrystalline silicates (CCS). The 'other' category contains small quantities of the less common raw materials such as shale, calcrete and phyllite and also includes ochre.

As expected from similar sites in the south-western Cape, quartz entirely dominates the waste category but a more interesting result is in the relative frequencies of silcrete, CCS and hornfels between the upper and lower parts of the deposit. Silcrete and CCS are more common in layers 1 and 2 than in layers 3, 4 and 5. Hornfels shows a reversal of this trend and is more abundant in the lower layers.

In the formal category, silcrete and quartz are the preferred raw materials and to a much lesser extent CCS. Only one hornfels formal tool was recovered from the excavation. Scrapers were equally common in quartz and silcrete while adzes were made predominantly on silcrete with a few examples in CCS.

Waste

As can be seen from the artefact frequencies listed in Table 4, the site is waste dominated with waste material comprising over 98% of the total assemblage. The bulk of the waste is made up of chips, chunks and flakes (>98% in layers 1, 2 & 3; >97% in layers 4 & 5). The slightly smaller percentages registered in layers 4 and 5 are a function of the higher incidence of quartz bladelets in these layers. This is to some extent mirrored by the relatively high numbers of cores in layers 4 and 5 with bladelet cores reaching their highest frequency in layer 4 (see Table 7).

A total of 5 unmodified quartz crystals were recovered during the excavation (1 each from layers 1 & 2 and 3 from layer 5). One explanation for these kinds of objects is that they were valued as shamanistic paraphernalia (Wadley 1987; Miller *et al.* 1991; Yates & Manhire 1991).

Utilised pieces

These comprised approximately 2% of the artefacts in layers 1 & 2 and 0.8% or less in layers 3, 4 & 5 and consisted almost entirely of utilised flakes and ochre. Most of the ochre was in the form of unmodified chunks with only three pieces having been ground. No grindstones were recovered from the excavation.

Formal tools

These comprised 0.6 - 0.8% of the artefacts in layers 1 & 2 and only 0.1 - 0.3% in layers 3, 4 & 5. These low frequencies are partly due to the fact that a 1 mm sieve was used throughout the excavation resulting in a high recovery of waste material, notably quartz chips. This would effectively suppress the ratio of formal tools especially when compared to sites where a larger mesh sieve was employed.

The formal tools were dominated by scrapers and adzes in the upper layers and by scrapers in the lower layers (Fig. 6). The incidence of backed pieces was very low at the site. No drills were recovered from the excavation. Miscellaneous retouched pieces (MRP's) were consistently present except in layer 3 where the total volume of excavated deposit was very small.

As can be seen from Table 6, most of the adzes came from layers 1 & 2. Furthermore, of the 18 adzes recorded in layer 2, only one came from the lower part of the layer dated to 4420 ± 60 BP. This means that the majority of the adzes date to within the last 2500 years which is consistent with the results obtained from similar assemblages in the south-western Cape such as Tortoise Cave (Robey 1984) and Klipfonteinrand 2 (Nackerdien 1989).

The formal tools recovered from sieving the dumps left from the earlier diggings at the site have also been included in Table 6. Despite being totally out of context the dumps proved quite rewarding as they produced more formal tools than the excavation. The fact that only scrapers, adzes and MRP's were recovered from the dumps, in a ratio that closely resembles layers 1 & 2, suggests that it was mainly these layers that were intercepted by the landowner's excavations at the back of

Table 3. Raw material composition of major artefact categories.

LAYER	QTZ n	QTZ %	QTZITE n	QTZITE %	HORNFELS n	HORNFELS %	SILCRETE n	SILCRETE %	CCS n	CCS %	OTHER n	OTHER %	TOTAL
WASTE													
1	2869	86.78	50	1.51	86	2.60	244	7.38	37	1.12	20	0.60	3306
2	2511	84.86	40	1.35	50	1.69	300	10.14	31	1.05	27	0.91	2959
3	521	85.83	2	0.33	64	10.54	17	2.80	1	0.16	2	0.33	607
4	5531	88.74	110	1.76	385	6.18	150	2.41	34	0.55	23	0.37	6233
5	3326	87.85	107	2.83	166	4.38	167	4.41	5	0.13	15	0.40	3786
UTILISED													
2	5	7.69	-	-	3	4.62	8	12.31	2	3.08	47	72.31	65
2	10	15.87	2	3.17	-	-	8	12.70	-	-	43	68.25	63
3	-	-	1	100.00	-	-	-	-	-	-	-	-	1
4	12	25.00	1	2.08	-	-	3	6.25	-	-	32	6.67	48
5	5	23.81	-	-	3	14.29	1	4.76	-	-	12	57.14	21
FORMAL													
1	7	35.00	-	-	-	-	12	60.00	1	5.00	-	-	20
2	16	29.09	-	-	-	-	34	61.82	5	9.09	-	-	55
3	-	-	-	-	-	-	1	100.00	-	-	-	-	1
4	7	38.89	-	-	-	-	10	55.56	1	5.56	-	-	18
5	2	40.00	-	-	1	20.00	2	40.00	-	-	-	-	5
TOTAL LAYER													
1	2881	84.96	50	1.47	89	2.62	264	7.79	40	1.18	67	1.98	3391
2	2537	82.45	42	1.36	50	1.62	342	11.11	36	1.17	70	2.27	3077
3	521	85.55	3	0.49	64	10.51	18	2.96	1	0.16	2	0.33	609
4	5550	88.11	111	1.76	385	6.11	163	2.59	35	0.56	55	0.87	6299
5	3333	87.43	107	2.81	170	4.46	170	4.46	5	0.13	27	0.71	3812

Table 4. Stone artefact frequencies.

	LAYER 1 n	% category	% layer total	LAYER 2 n	% category	% layer total	LAYER 3 n	% category	% layer total	LAYER 4 n	% category	% layer total	LAYER 5 n	% category	% layer total
WASTE															
Chips	2454	74.2		2065	69.8		537	88.5		4510	72.4		2705	71.5	
Chunks	507	15.3		464	15.7		41	6.8		969	15.6		589	15.6	
Flakes	310	9.4		378	12.8		28	4.6		570	9.1		386	10.2	
Blades	1	0.1		3	0.1		-	-		-	-		7	0.2	
Bladelets	18	0.5		30	1.0		1	0.2		127	2.0		72	1.9	
Cores	16	0.5		19	0.6		-	-		57	0.9		27	0.7	
TOTAL WASTE	3306	100.0	97.5	2959	100.0	96.2	607	100.1	99.7	6233	100.0	99.0	3786	100.1	99.3
UTILISED															
Util. flakes	18	27.7		18	28.6		-	-		15	31.3		9	42.9	
Hammerstones	-	-		2	3.2		-	-		-	-		-	-	
Manuports	-	-		-	-		1	100.0		1	2.1		-	-	
Ochre	47	72.3		41	65.1		-	-		31	64.6		12	57.1	
Ground ochre	-	-		2	3.2		-	-		1	2.1		-	-	
TOTAL UTIL.	65	100.0	1.9	63	100.1	2.1	1	100.0	0.2	48	100.1	0.8	21	100.0	0.6
FORMAL															
Scrapers	8	40.0		27	49.1		1	100.0		9	50.0		2	40.0	
Adzes	11	55.0		18	32.7		-	-		3	16.7		-	-	
Backed pieces	-	-		2	3.6		-	-		2	11.1		1	20.0	
MRP	1	5.0		8	14.6		-	-		4	22.2		2	40.0	
TOTAL FORMAL	20	100.0	0.6	55	100.0	1.8	1	100.0	0.2	18	100.0	0.3	5	100.0	0.1
LAYER TOTAL	3391		100.0	3077		100.0	609		100.0	6299		100.0	3812		100.0

the shelter.

One interesting observation from the Faraoskop shelter was the large number of adzes made on older flakes. This has previously been reported from several locations in the south-western Cape (Kaplan 1987; Manhire 1987; Anderson 1991) as well as on the Cape Peninsula (Rudner & Rudner 1954). The selection of older flakes at Faraoskop was quite specific as only adzes were involved and only silcrete implicated. Of the total number of 68 silcrete adzes from the excavation and the dumps, 30 were made by adapting older flakes. A deliberate collecting strategy seems to have been pursued as a number of faceted platform flakes, presumably of MSA origin, were present in layers 1 & 2 and in the dumps. Whilst most of these retained their original patina intact some displayed utilisation damage which affected the patina and some ended up as fully retouched adzes. A possible source of MSA flakes is the extensive open scatter on the koppie Wolfberg (Manhire 1987) which is situated on a direct line between Faraoskop and the coast.

One further point concerning the adzes at the site was that over a quarter of the sample retained traces of mastic

Table 5. Raw material composition of formal tool classes.

	QUARTZ		QTZITE		HORNFELS		SILCRETE		CCS		OTHER		TOTAL
LAYER	n	%	n	%	n	%	n	%	n	%	n	%	
						SCRAPERS							
1	6	75.00	-	-	-	-	2	25.00	-	-	-	-	8
2	14	51.85	-	-	-	-	12	44.44	1	3.70	-	-	27
3	-	-	-	-	-	-	1	100.00	-	-	-	-	1
4	6	66.67	-	-	-	-	3	33.33	-	-	-	-	9
5	1	50.00	-	-	-	-	1	50.00	-	-	-	-	2
						ADZES							
1	-	-	-	-	-	-	10	90.91	1	9.09	-	-	11
2	-	-	-	-	-	-	16	88.89	2	11.11	-	-	18
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	3	100.00	-	-	-	-	3
5	-	-	-	-	-	-	-	-	-	-	-	-	-
						BACKED PIECES							
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1	50.00	-	-	-	-	1	50.00	-	-	-	-	2
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	2	100.00	-	-	-	-	2
5	1	100.00	-	-	-	-	-	-	-	-	-	-	1
						MISCELLANEOUS RETOUCHED PIECES							
1	1	100.00	-	-	-	-	-	-	-	-	-	-	1
2	1	12.50	-	-	-	-	5	62.50	2	25.00	-	-	8
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1	25.00	-	-	-	-	2	50.00	1	25.00	-	-	4
5	-	-	-	-	1	50.00	1	50.00	-	-	-	-	2

on the back and sides where the tool had been mounted. A single example of an adze with an intact mastic mount was found during the excavation.

OCHRE

Ochre was present in fairly high quantities in layers 1 & 2 and in layers 4 & 5 (Table 8). Traces of ochre were also found in layer 3 but in a highly softened state which could not be quantified. Only three pieces of ground ochre were recovered from the excavation (2 from layer 2 and 1 from layer 4) and a single ochred stone came from layer 5 (BS2 in square C3). Aside from the normal red ochre, two black manganese nodules were present in layer 2.

POTTERY

Pottery was extremely scarce at Faraoskop both on the talus slope and in the shelter. Only two pieces were recovered from the excavation, one from layer 1 (SSH in square D5) and one from the top of layer 2 (MAC(H1) in square D4). Both were adiagnostic and one piece very eroded.

WORKED BONE

Only three pieces of worked bone were recovered from the excavation, two of these were from layer 1 and the remaining piece from layer 2. They included a double-pointed bone awl (Surface in square C3), a small ground fragment (VBS1 in square D4) and a calcaneum of a large feline which had been drilled through (LSV4 in square D5).

A total of 21 bone shavings were present, all from layer 1 and all associated with grass-rich units in squares D4 and D5.

By far the most spectacular pieces of worked bone came from the hole previously dug by the owner of the property at the back of the site. These included several bone points, two spatulas, a bone tube with shaved ends and three highly polished tubular bone beads. A selection of these are illustrated in Figure 7.

OSTRICH EGGSHELL

OES beads

OES beads were recovered from all the layers with the highest frequencies recorded in the upper two layers (Table 9). Unfinished beads were also present throughout the excavation showing that bead manufacture took place at the site during all the occupied phases. Measurement of bead diameters and aperture sizes (Yates *et al.* in press) showed that large beads were generally restricted to layer 1 and that small beads predominated in the pre-2000 BP deposits (layers 2 to 5).

All the OES beads from the excavation were separate from each other aside from a pair of heavily ochred joined beads from layer 1 (SSH in square D5). The only strung beads came from the material removed by the owner from the back of the site. These consisted of two short strings of OES beads with a seed "spacer" between each bead (illustrated in Fig. 8).

Apart from the OES beads, a small number of glass trade beads, seed beads and a single small iron bead were recovered from the excavation. These all came from layer 1 and are listed in Table 8. The glass trade beads were of the type known as "Indian red on a green core" and are most likely of Dutch or Italian manufacture (Sharma Saitowitz pers. comm.).

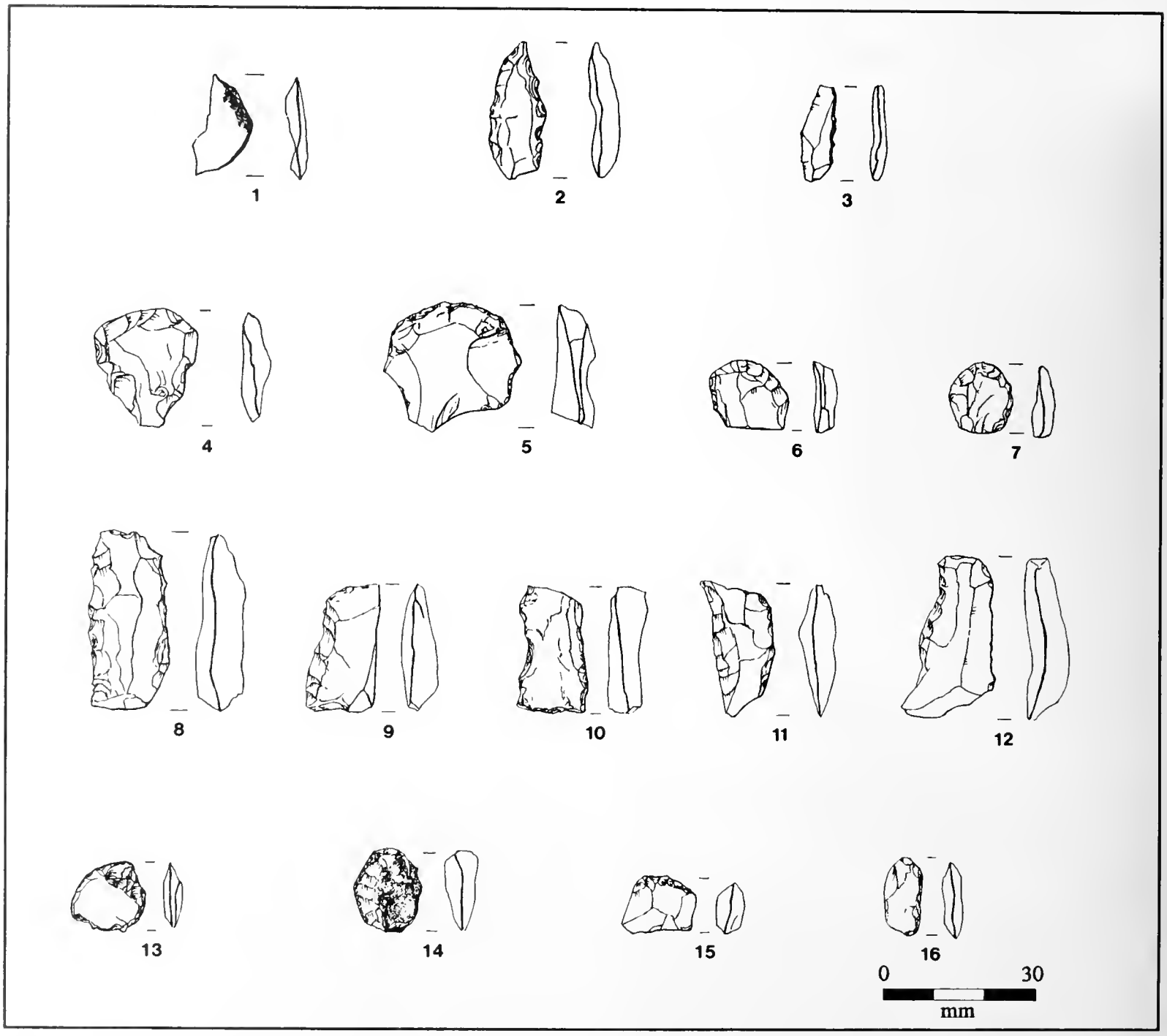

Fig. 6. Faraoskop Rock Shelter stone artefacts. 1 to 3 backed pieces. (1 - quartz segment from layer 2; 2 - silcrete backed scraper from layer 2; 3 - silcrete backed blade from layer 4). 4 to 7 silcrete scrapers (5 & 7 from layer 1, 4 from layer 2, 6 from layer 4). 8 to 12 silcrete adzes (8 from layer 1, 10 & 11 from layer 2, 9 & 12 from layer 4). 13 to 16 quartz scrapers (13 & 15 from layer 1, 14 & 16 from layer 4).

Table 6. Inventory of formal tool assemblage.

	LAYER 1		LAYER 2		LAYER 3		LAYER 4		LAYER 5		DUMPS	
	n	%	n	%	n	%	n	%	n	%	n	%
Backed scrapers	-		2		-		1		-		1	
Other scrapers	8		25		1		8		2		42	
Total scrapers	8	40.00	27	49.09	1	100.00	9	50.00	2	40.00	43	43.88
Adzes	11	55.00	18	32.73	0	0.00	3	16.67	0	0.00	45	45.92
Backed blades	-		1		-		1		-		-	
Backed points	-		-		-		1		-		-	
Segments	-		1		-		-		-		-	
Misc.backed	-		-		-		-		1		-	
Total backed	0	0.00	2	3.64	0	0.00	2	11.11	1	20.00	0	0.00
Misc.ret.pieces	1	5.00	8	14.55	0	0.00	4	22.22	2	40.00	10	10.20
TOTAL FORMAL	20	100.00	55	100.00	1	100.00	18	100.00	5	100.00	98	100.00

Table 7. Core types.

	LAYER 1		LAYER 2		LAYER 3		LAYER 4		LAYER 5	
	n	%type	n	%type	n	%type	n	%type	n	%type
Bipolar cores	8	50.00	13	68.42	-	-	24	42.11	4	51.85
Bladelet cores	2	12.50	-	-	-	-	10	17.54	2	7.41
Irregular cores	6	37.50	6	31.58	-	-	23	40.35	11	40.74
TOTAL CORES	16	100.00	19	100.00	-	-	57	100.00	27	100.00

Table 8. Cultural assemblages.

	LAYER					
	1	2	3	4	5	TOTAL
OCHRE						
Ochre	47	41	-	31	12	131
Ground ochre	-	2	-	1	-	3
Manganese	-	2	-	-	-	2
POTTERY						
Fragments	1	1	-	-	-	2
BONE						
Worked bone	2	1	-	-	-	3
Bone shavings	21	-	-	-	-	21
BEADS						
OES beads	70	27	3	14	7	121
Glass trade	2	-	-	-	-	2
Seed beads	6	-	-	-	-	6
Iron beads	1	-	-	-	-	1
OES						
Fragments	938	345	1046	2768	383	5480
Worked OES	3	2	2	20	-	27
Decorated OES	-	1	-	1	-	2
MARINE SHELL						
Unworked	549	370	2	114	26	1061
Worked	24	6	-	1	-	31
WOOD						
Worked wood	2	-	-	-	-	2
Shavings	1207	151	-	26	4	1388
MISCELLANEOUS						
Reeds	129	4	-	-	-	133
Twine	6	1	-	-	-	7
Leather	3	1	-	-	-	4

OES pieces

Pieces of broken ostrich eggshell were ubiquitous throughout the excavation although both the frequency and the degree of fragmentation varied between layers. The total number of pieces recorded for each layer are listed in Table 8 but a better reflection of the relative frequency is obtained from Table 10 where the weights per unit volume are included.

By far the greatest concentration was registered in the terminal Pleistocene deposits (layers 3 and 4), a result which is consistent with other sites covering a similar time span such as Elands Bay Cave (Parkington 1977). Fragmentation of OES was most pronounced in the CBA unit (Layer 3) which had a high count of individual pieces (n = 1046) for a relatively low weight (115.9 g).

Worked and decorated OES

The incidence of worked or utilised OES was generally low at Faraoskop, the highest count being in layer 4 where 20 pieces were recorded (Table 8). Most of the worked pieces were smoothed or polished fragments, the remainder being notched fragments which may originally have been mouth parts of ostrich egg water containers.

Only one piece of decorated OES was recovered from the excavation, this being an OES fragment with a "bar" of cross-hatching from layer 2. This is illustrated in Figure 8 along with a cross-hatched "disc" recovered from the landowner's dump.

MARINE SHELL

Marine shells were present in relatively small quantities and have been included within the cultural assemblages as it is unlikely, for a number of reasons, that they represent items of diet. Although the sea is visible from Faraoskop, at a distance of 30 km, the site is well beyond the shell midden zone which normally extends a maximum of 7 km inland from the sea in this area (Manhire 1987). The species represented at the site and the presence of worked examples suggest that marine shells were introduced into the site specifically for translation into tools or decorative objects.

Unworked shell

Very few whole shells were recovered from the site and the bulk of the sample consisted of fragments of black mussel and white mussel. The species present in the excavation are listed in Table 11.

Although marine shell was present throughout the sequence the greatest density occurred in layers 1 and 2. This is best shown in Table 10 where the weight of shell is expressed in terms of volume.

Worked shell

The only marine shells used as tools at Faraoskop were black mussels and white mussels and, with a single exception, their distribution was confined to layers 1 and 2 (Table 12). Furthermore, the two species were used in distinctive, and quite different, ways.

The white mussel shells showed retouch and often heavy edge damage, characteristically along the broad, curved margin opposite the hinge. The term "Donax scraper" has been applied to these tools (Parkington 1977) and aptly describes their functional attributes (Fig. 8). No obvious retouch was recorded on the black mussel shells, *Choromytilus meridionalis*, and the wear patterns were much less pronounced, usually taking the form of polish and striations along the curved edge opposite, and sometimes adjacent, to the hinge.

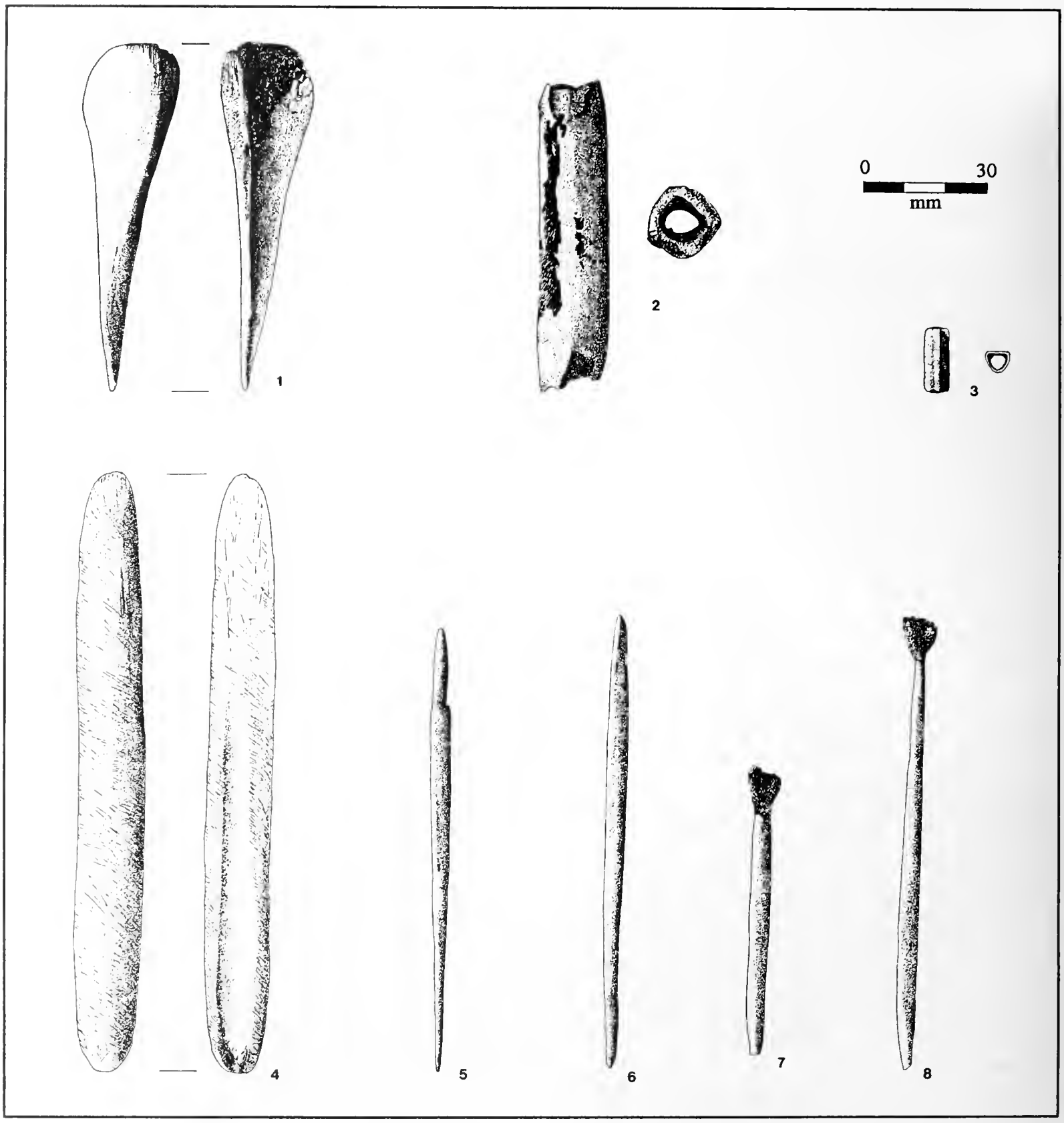

Fig. 7. Faraoskop Rock Shelter bone implements. All recovered from informal excavation by landowner. 1 - awl; 2 - tube with shaved ends; 3 - tube bead; 4 - spatula; 5 & 6 - points; 7 & 8 - points with mastic mounts.

Pendants and ornaments

It is significant that although no shell pendants or shell ornaments were found during the excavation, a total of 21 were obtained from the material dug out from the back of the site by the owner. Furthermore, none of the species used to make pendants or ornaments occurred in the shell sample from the excavation.

The decorative shells occurred in two basic types. Firstly there were whelks which had been perforated and

Table 9. Ostrich eggshell beads.

	LAYER					
	1	2	3	4	5	TOTAL
Whole	39	18	2	11	6	76
Broken	19	6	-	2	-	27
Unfinished	5	-	-	1	1	7
Broken Unfinished	7	3	1	-	-	11
TOTAL	70	27	3	14	7	121

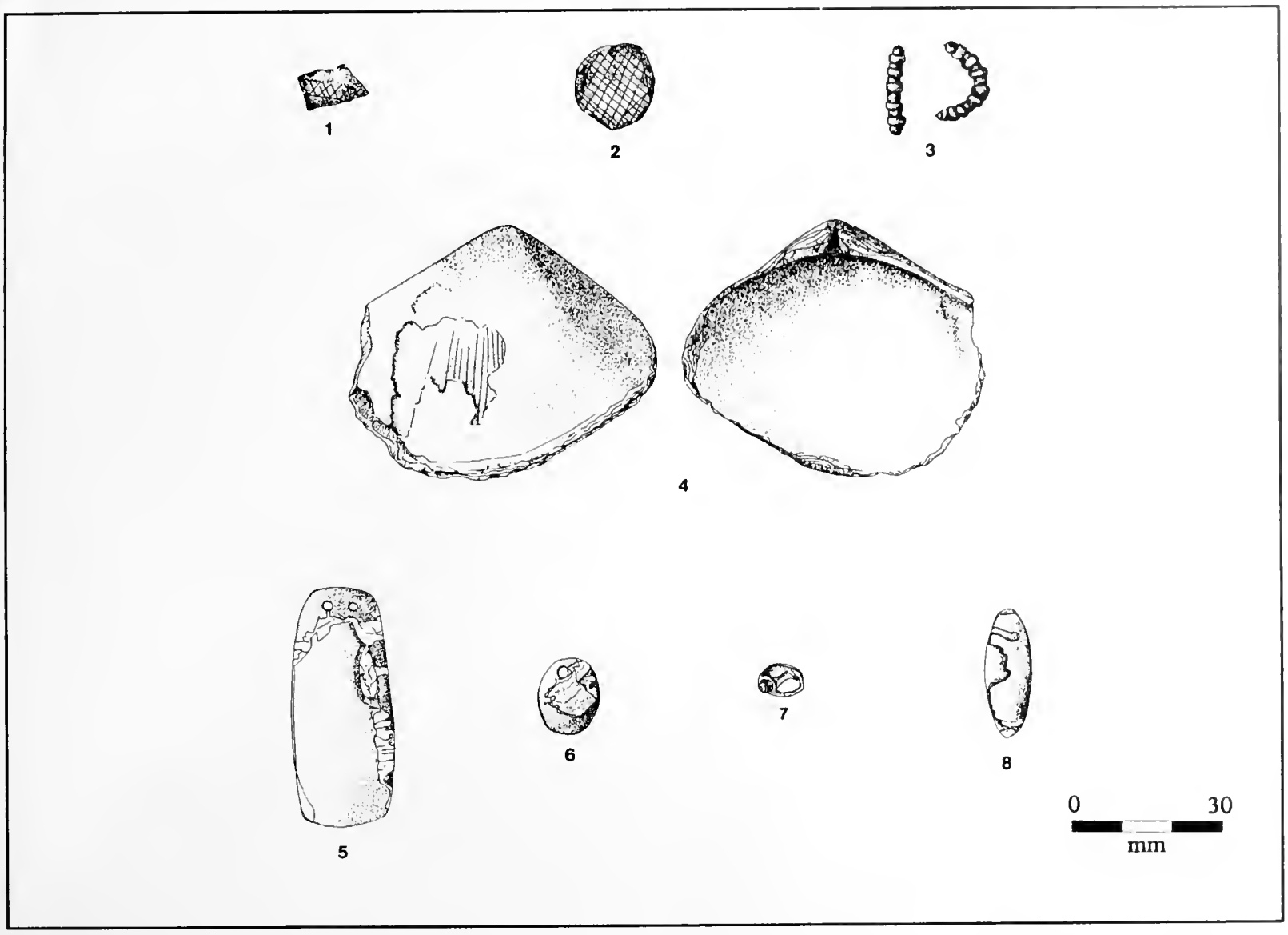

Fig. 8. Faraoskop Rock Shelter ostrich eggshell and marine shell artefacts. All from landowner's informal excavation unless otherwise stated. 1 - OES fragment with cross-hatching (layer 2); 2 - OES disc with cross hatching; 3 - short strings of OES beads with seed "spacers"; 4 - *Donax* scraper; 5,6 & 8 - *T. sarmaticus* shell pendants; 7 - perforated *Nassarius kraussianus* shell with ochre.

Table 10. Weight per volume of ostrich eggshell and marine shell from squares D3 + C3.

Layer	Buckets n	OES g	OES g/100bkt	M.shell g	M.shell g/100bkt
1	5.5	13.8	262.9	8.3	158.1
2	24.5	69.6	284.1	29.1	118.8
3	5.5	115.9	2107.3	0.3	5.5
4	46.5	930.9	1991.2	22.4	47.9
5	38.0	187.8	494.2	11.3	29.7

often showed traces of ochre and, secondly, there were shaped pendants which displayed a nacreous sheen to one of the surfaces. Two species of whelk were present; small shells of *Nassarius kraussianus* and the larger *Burnapena papyracea papyracea*. As far as could be determined, all the pendants were made from "alikreukel" shells (*Turbo sarmaticus*). Apart from the pendants and whelks, there was also a shell "ring" (*Siphonaria* sp.) and two unmodified *Bullia digitalis* shells with ochre staining. A selection of the pendants and shell ornaments are shown in Figure 8.

Table 11. Marine shell (unworked).

	LAYER					
	1	2	3	4	5	TOTAL
C. meridionalis	513	327	-	97	16	953
A. ater	-	2?	-	-	-	2
D. serra	34	35	2	11	9	91
P. granularis	-	1	-	4	-	5
P. granatina	-	2	-	-	-	2
Patella sp.	2	1	-	-	1	4
Crepidula sp.	-	-	-	1	-	1
Whelk	-	2	-	-	-	2
TOTAL	549	370	2	113	26	1060

Table 12. Worked marine shell.

	Layer					
	1	2	3	4	5	Total
C. meridionalis	19	6	-	-	-	25
Donax serra	5	-	-	1	-	6
Total	24	6	-	1	-	31

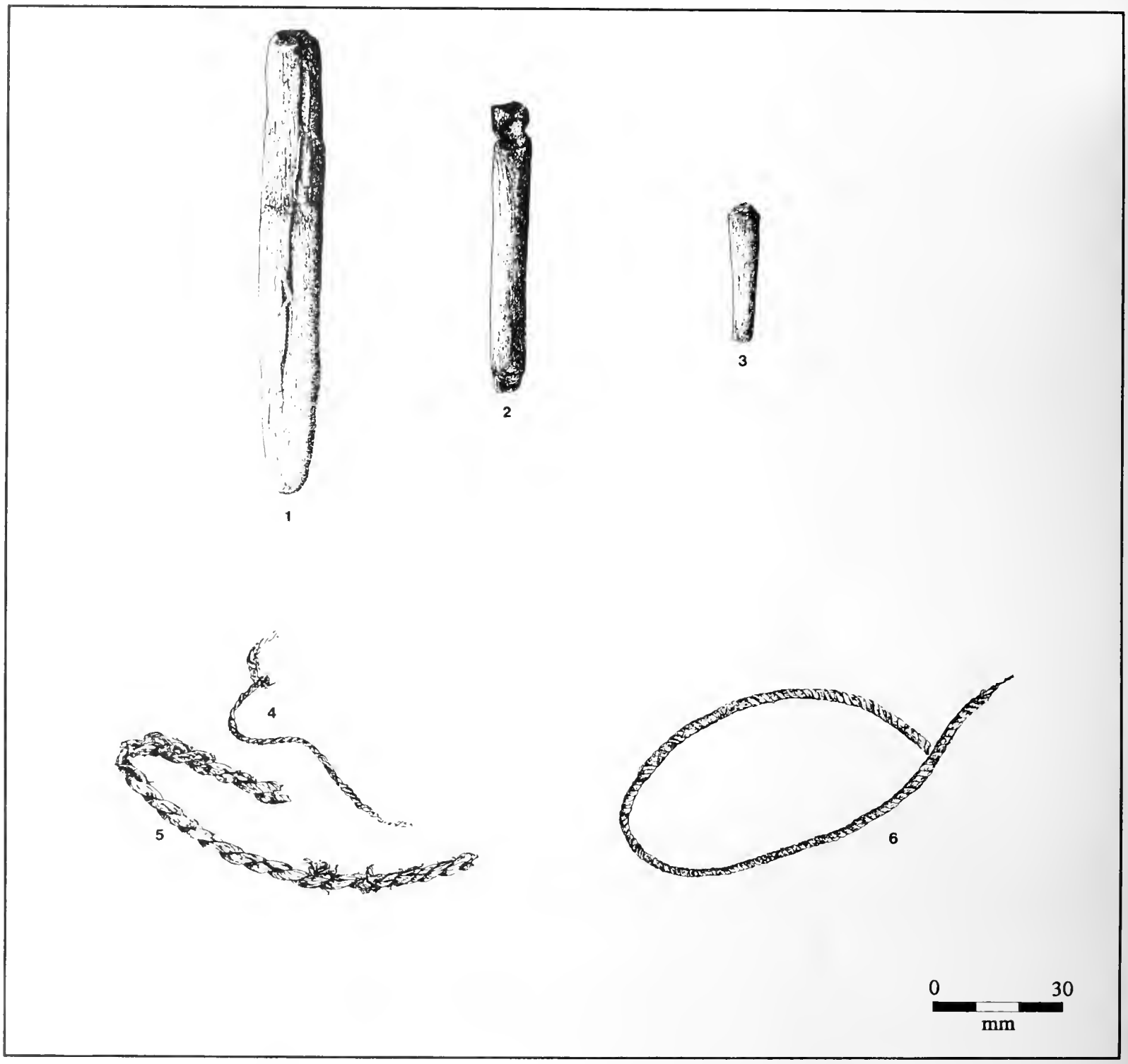

Fig. 9. Faraoskop Rock Shelter wood and plant fibre artefacts. All from landowner's informal excavation unless otherwise stated. 1 - wooden peg (layer 1); 2 - fire stick (layer 1); 3 - fire drill; 4 to 6 - twine.

WORKED WOOD

Only two wooden artefacts were recovered from the excavation, both from layer 1. One was a sharpened wood peg of the kind often found in cracks in rock shelters in the south-western Cape and the other was a fire stick made of soft wood showing burn marks from use as a fire drill (Fig. 9).

Wood shavings were present in all layers, excepting layer 3, with the majority appearing in layer 1 (Table 8). By far the greatest concentration occurred in square D5 (n = 720) where the shavings were associated with the grassy units and in particular with Grass Pit (n = 290).

REEDS

Fragments of *Cyperus textilis* have been found at many of the Later Stone Age sites excavated in the south-western Cape. They are usually associated with grass bedding patches and the regularly spaced perforations found on reed fragments indicate that they were probably used for matting.

At Faraoskop they were almost entirely restricted to layer 1 (Table 8) and consisted mainly of short cut fragments some of which showed the characteristic splitting or perforations. As with the wood shavings, the greatest concentration occurred in Grass Pit in square D5 (n = 61).

TWINE

A total of seven pieces of string or twine came from the excavation, all but one from layer 1, and a further eight pieces were retrieved from the material removed by the landowner from the back of the site. Despite the

relatively small sample, there were a variety of types ranging from fine, double-stranded twine to fairly thick, triple-stranded string as well as fragments of knotted fibres (Fig. 9).

LEATHER

Only four pieces of leather were recovered from the excavation, three from layer 1 and one from layer 2. The examples from layer 1 were all small adiagnostic fragments whilst the single leather "object" from layer 2 was far more substantial. In form this was an oblong bundle of tightly folded leather bound with string (Fig. 10). It was buried, in an upright position, within the large ash body (HCA) in square C3. It was encrusted with ash and charcoal but not actually burnt which suggests that it post-dates the ash body but was placed there while the ash was still soft and not in its present compacted form. The object was X-rayed at the UCT Medical School to determine if anything was contained within the bundle but radiographs showed only compressed folds of leather with no inclusions.

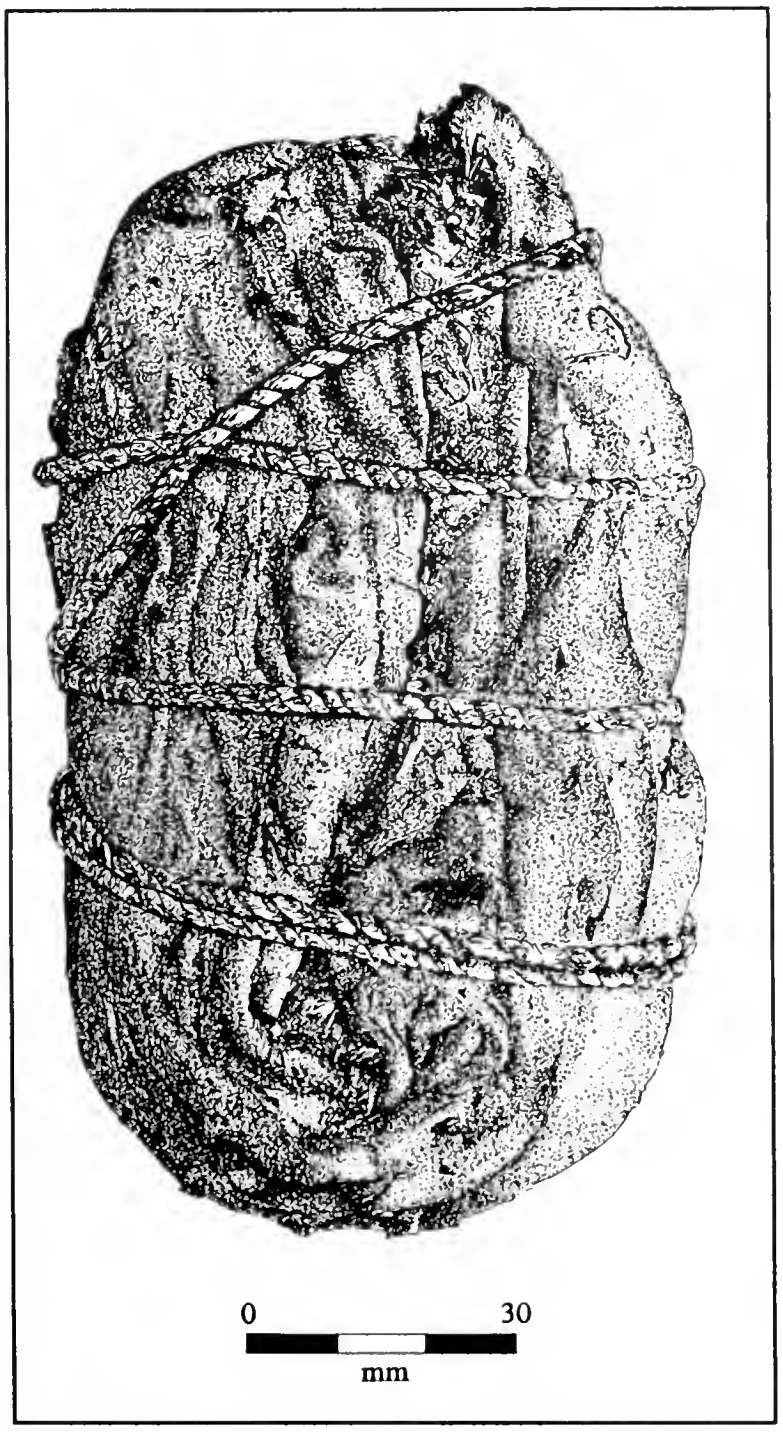

Fig. 10. Faraoskop Rock Shelter. Leather bundle bound with string (layer 2).

Several leather items were also retrieved from the material removed from the back of the site. Apart from small fragments and strips of leather there were also some larger sewn sections. The most complete example (Fig. 11) was a large piece of antelope hide, partly folded over and with seams joined by fine stitching. The surface of the hide was scored with numerous thin lines producing a cross-hatched pattern.

ARROWS

The arrows described here were all obtained from the owner of the site and are of particular interest as they are fletched. They were reported to have come from the same area at the back of the shelter as the burials. No similar examples were recovered during the excavation. The sample included one virtually complete reed arrow shaft and three snapped shafts.

The one most complete shaft is notched at the proximal end, has fine thread binding and a socket for a projectile point at the distal end. The total length is ± 350 mm. The unusual features are the feather traces close to the nock of the arrow (Fig. 12). The three broken shafts all resemble the more complete version. One is a distal portion with socket and binding and the other two are proximal portions, both of which have faint feather traces.

Although none of the arrows had projectile points attached there were a number of bone points, from the same source, which fitted the sockets. Two of these were double pointed and two were bone points with mastic mounts still in place (Fig. 7). No link shafts were recovered from the site and it seems likely that the points were designed to fit directly into the arrow sockets.

FAUNA

The Faraoskop faunal assemblage (Table 13), analysed by Liora Horwitz, comprised some 350 mammalian bones and 4400 tortoise bones (excluding carapace fragments). Bioturbation of the deposits by rodents and termites, as well as disturbance by carnivores, resulted in a degree of mixing of the faunal remains. Examination of the tortoise bones (Horwitz n.d.) suggested that the greatest degree of contamination occurred in layers 1 and 2.

As with other faunal assemblages reported from the south-western Cape (Klein & Cruz-Uribe 1987), the Faraoskop mammalian fauna is dominated by bovids. Due to the very poor preservation of the mammalian remains very few of the bones could be identified as to species. In order to maximise the sample size the data for bovids were divided into size classes rather than species and are presented in this format in Table 13 (Horwitz n.d.).

small bovid: grysbok, steenbok size
small-medium bovid: bushbuck, reedbuck size
medium bovid: sheep size
medium-large bovid: blue antelope size
large bovid: buffalo, eland size

There is an increase in the frequency of small bovids

Fig. 11. Faraoskop Rock Shelter. Part of antelope skin, showing stitching and scoring (landowner's informal excavation).

and a decrease in large bovids between the earlier and later deposits. This is seen most clearly in Table 14 where the bovid frequencies are compared using three size groupings. Layers 1 & 2 have the highest numbers of small sized bovids whereas in layer 5 almost as many large sized bovids are represented as small sized ones.

Despite the smaller sample size and lack of specific identification, the Faraoskop results are similar to those reported by Klein and Cruz-Uribe (1987) for Elands Bay Cave. They suggest that the shift from the large gregarious grazers, which dominated the late Pleistocene assemblages, to the small solitary browsers, characteristic of the Holocene, reflect changes in the local vegetation which included more grass before 10-11 000 BP. In the southern Cape (Klein 1980), the shift from grazers to browsers correlates with the change from the cooler temperatures of the Upper Pleistocene to the warmer conditions of the Holocene which commenced at about 10 000 BP.

The carnivore remains at Faraoskop (Horwitz n.d.) included a small felid and a small canid, probably a fox, in layer 1. Similar small sized canid bones were also present in layer 5. Other mammalian remains included a wild pig in layer 4. Among the smaller mammals, bones

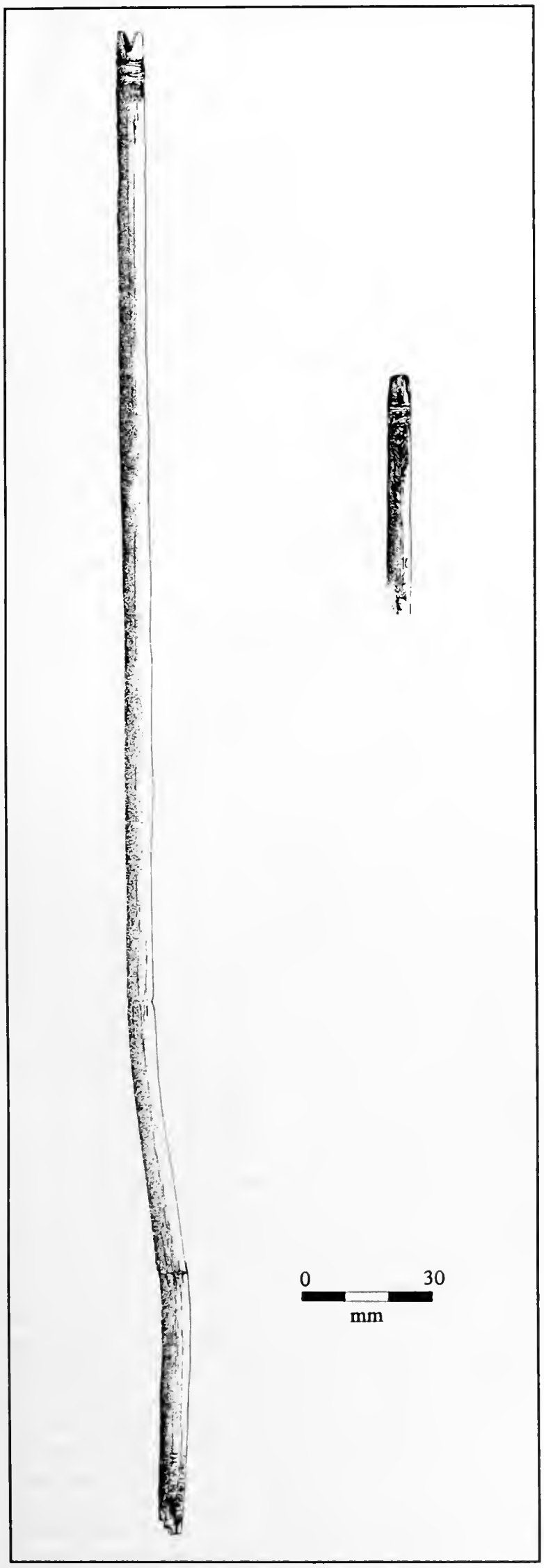

Fig. 12. Faraoskop Rock Shelter. Reed arrow shaft and notched end showing feather traces (landowner's informal excavation).

Table 13. Macrofauna assemblage.

	Layer				
	1	2	3	4	5
Small bovid	43/3	3/6	9/2	60/4	17/2
S-M bovid	8/2	13/2	0/0	9/1	8/1
Med. bovid	12/2	9/1	2/1	19/2	4/1
M-L bovid	1/1	1/1	6/1	4/1	4/1
Large Bovid	3/1	4/1	0/0	14/2	11/2
TOTAL BOVID	67/9	70/11	17/4	106/10	44/7
Suidae	0/0	0/0	0/0	1/1	0/0
Carnivora	6/2	0/0	0/0	2/1	1/1
Rock hyrax	11/2	3/1	0/0	5/1	16/3
Hare	3/1	3/1	0/0	1/1	1/1
Porcupine	1/1	0/0	0/0	0/0	0/0
Hedgehog	0/0	0/0	0/0	5/1	0/0
Tortoise	1190/22	312/9	106/3	1840/48	970/51
Rodent	X	X	0	X	X
Bird	X	X	0	X	X
Reptile*	X	X	0	X	X
Fish	0	X	0	0	X

Key: X = present
* excludes tortoise bones
(Table after Horwitz, n.d.)

of dassie, hare and hedgehog were present in small numbers.

The presence of wild pig and hedgehog in layer 4 are of note as they also occur during the same time period (c. 11-12 000 BP) at Elands Bay Cave with hedgehog in particular being well represented (Klein & Cruz-Uribe 1987). Their absence at Faraoskop and virtual absence at Elands Bay Cave in mid to late Holocene deposits may be indicative of climatic changes. Hedgehog require a minimum annual rainfall of 300 mm (Skinner & Smithers 1990) which is somewhat higher than the normal for the coastal foreland today. Furthermore, there are no confirmed sightings of hedgehog in the south-western Cape during the colonial era (Skead 1980).

Isolated fish bones, mainly vertebrae, were present in layers 2 and 5. Whilst the sample was to small to allow for specific identifications it was noted that the fish were of marine origin (Cedric Poggenpoel, pers. comm.). Bird remains were present throughout, excepting layer 3, with some 10 bones found in layer 1 and less than 5 bones in the remaining layers (Horwitz n.d.).

Rodent cranial and post-cranial remains were fairly common throughout the deposits and were certainly responsible for some, if not most, of the extensive burrowing.

Remains of the angulate tortoise (*Chersina angulata*) were generally abundant in the Faraoskop deposits although fluctuations in absolute numbers occurred throughout the sequence. They were common in the upper units (layer 1) and also in the terminal Pleistocene levels represented by layers 4 and 5 (Table 13). They were also more abundant in these layers relative to bovids (Table 15).

Klein and Cruz-Uribe (1983, 1987) have demonstrated that in both the south-western and southern Cape there was a slight reduction in the size of tortoises from the late Pleistocene through the Holocene culminating in a significant drop in size in the late Holocene. They attribute this to two possible factors: firstly, an increase

Table 14. Comparison of bovid classes.

LAYER	Small bovid NISP	%TOT	MNI	%TOT	Small med./med. bovid NISP	%TOT	MNI	%TOT	Med.large/large bovid NISP	%TOT	MNI	%TOT
1	43	64.2	3	33.3	20	29.9	4	44.4	4	6.0	2	22.2
2	43	61.4	6	54.5	22	31.4	3	27.3	5	7.1	2	18.2
3	9	52.9	2	50.0	2	11.8	1	25.0	6	35.3	1	25.0
4	60	56.6	4	40.0	28	26.4	3	30.0	18	17.0	3	30.0
5	17	38.6	2	28.6	12	27.3	2	28.6	15	34.1	3	42.9

Table 15. Ratios of tortoise to bovid numbers through time.

LAYER	^{14}C BP	TORTOISE:BOVID MNI	NISP
1	670	2.4	17.8
2	2000-4420	0.8	4.5
3	10810	0.8	6.2
4	11550	4.8	17.4
5	16500	7.3	22.0

in the intensity of human predation and, secondly, a slowing of the tortoise growth rate due to adverse environmental conditions. They also note that these two explanations are not mutually exclusive.

Measurements of the Faraoskop tortoise sample (Horwitz, n.d.) show a slight reduction in the size range and mean of both the femora and humeri throughout the sequence although this is not so pronounced as the overall size changes from Elands Bay Cave and Tortoise Cave described by Klein and Cruz-Uribe (1987).

PLANT REMAINS

No systematic analysis of the botanical material was attempted as most of the remains were recovered from the surface units which were in a highly disturbed condition. Some patterning was visible, however, and the following comments relate to the frequency and distribution of the various species recorded. Although plant material was present throughout the excavation, the samples from the lower units were suspect as they were equally well preserved as the surface material and most probably introduced by burrowing animals.

Liengme (1987) notes that three main kinds of plant rich deposits are commonly found at bedding and ash sites in the south-western Cape. These are:

1. Grass-dominated deposits usually at the back of shelters which represent the linings of sleeping hollows scraped into the underlying deposits.
2. Iridaceae-dominated deposits thought to represent food waste.
3. Special deposits such as pits.

Whilst these elements are all present at Faraoskop there was a lack of clear demarcation, particularly between grass bedding and iridaceous patches, which was probably a function of post-depositional disturbance. Although bedding grasses were prominent there were no clearly defined grass-filled bedding hollows. Again this is perhaps not surprising as most of the deposits close to the back wall had been previously removed. Iridaceous material was present in many of the units but in a dispersed rather than concentrated form. The only feature which could be described as a special purpose deposit was Grass Pit in Square D5 which contained large amounts of fibrous grass and corm fragments.

The bulk of the plant remains recovered from the excavated units came from Layer 1 with a much smaller contribution from layer 2. As noted above, plant material was also present in the late Pleistocene deposits (Layer 3 to 5) but was probably introduced. Fragments of unworked wood, twigs and bark were plentiful with greatest concentrations in the surface units. The bark included occasional pieces of Elephant's Foot (*Dioscorea elephantipes*). Bedding grasses and Restionaceae, mainly broken stalks and fragments, were locally abundant particularly in the Bedding Patches in Square C4 and in Grass Pit. The Bedding Patches are small units, truncated by the landowner's hole at the back of the site, and may be remnants of once more extensive bedding hollows.

Geophytes, mostly in the form of corm bases and tunic fragments, were plentiful in the upper units and, whilst local concentrations were discernible, there were no dense iridaceous patches. It is well established (Smith 1966; Parkington & Poggenpoel 1971 for example) that rootstocks were a major item of diet for both hunters and herders and represented an important carbohydrate source (Liengme 1987). The types of corms present at Faraoskop show the site to have more affinities with deposits from interior mountain sites rather than coastal locations. *Hexaglottis* and *Gladiolus* were the most common corms followed by *Moraea*. This is a similar situation to Andriesgrond (Anderson 1991) and Renbaan (Kaplan 1984), in the Oliphants River valley area. At both of these sites *Hexaglottis* is most abundant with *Gladiolus* being present at Renbaan and *Moraea* at Andriesgrond (Liengme 1987). The two other corm types present at Faraoskop, albeit at much lower frequencies, were *Watsonia* and *Homeria*. Corm species are not readily identifiable on the basis of the tunics alone but a single complete corm from Bedding Patch 3 proved to be *Watsonia meriana* (Peter Goldblatt pers.comm.).

In comparison to the quantity of geophyte remains, seeds were by no means common at Faraoskop. The most frequently encountered species, and the only one showing any tendency to concentration in pockets, was *Heeria argentea*. Several Kliphout trees were growing fairly close to the shelter and the seeds may well have been introduced by agencies other than human. Apart from *H. argentea*, various isolated seeds occurred throughout the

surface deposits with *Willdenovia* being most common followed by *Rhus*. Also present, but only in small numbers, were *Nylandtia spinosa*, *Chrysanthemoides* and *Ricinus communis*. The first of these, skildpadbessie, is found in the area and its rarity at the site was perhaps surprising. The presence of the other two is more intriguing. *Chrysanthemoides* is more typical of coastal dunes than the mountain fringes whilst the castor-oil plant, *R. communis*, is an exotic which has been recorded at several LSA sites in the south-western Cape (Parkington & Poggenpoel 1971; Liengme 1987).

HUMAN SKELETAL REMAINS

A total of twelve human burials were recovered from the site. Whilst burial complexes have been reported from several LSA sites in the southern Cape (Inskeep 1986; Hall & Binneman 1987) Faraoskop is, to date, the only site in the western Cape to yield multiple burials. Seven skeletons were removed by the landowner from the large hole at the back of the site and a further five recovered during the 1987 excavation from the smaller hole left by the owner close to the southern wall (Fig. 2). The skeletons are listed in Table 16, the last five (UCT 394 to 398) being the individuals recovered during the 1987 excavation.

Table 16. Faraoskop skeletons.

Skeleton No.	$\delta^{13}C$(‰)	Sex	Age at death	Radiocarbon date	
UCT 385	-16.9	female	25-35	Pta-5281	2130 ± 60
UCT 386	-16.8	male	40-50	Pta-5283	2000 ± 50
UCT 388	-18.8	juvenile	6-7	-	-
UCT 390	-17.2	male	30-40	-	-
UCT 391/389	-17.8	female	25-35	Pta-5284	2110 ± 70
UCT 392/387	-16.9	male	35-45	-	-
UCT 393	-	juvenile	2-3	-	-
UCT 394	-17.5	male	40+	Pta-4964	2150 ± 70
UCT 395	-	female	20-30	-	-
UCT 396	-17.7	indeterm.	30-35	Pta-4965	2090 ± 60
UCT 397	-16.5	female	40+	Pta-4967	2130 ± 45
UCT 398	-	indterm.	indeterm.	-	-

(After Sealy *et al* 1992)

Unfortunately nothing is known about the burial patterns or context of the first seven skeletons listed in Table 16 apart from the fact that they were removed from the back of the shelter. The mode of burial for the remaining five burials was in the side flexed position with the orientation, based on the line of the backbone, predominantly north (Alder 1988). They were all tightly placed in a small hole such that they tended to encroach upon each other. There were no associated burial goods.

Six of the skeletons have been dated, with three of the dated individuals coming from the landowner's set and three from the UCT excavated sample (Table 16). At two standard deviations (corrected for $\delta^{13}C$) the dates range between 2300 and 1900 BP. It seems probable that the remaining six undated skeletons also fall within this time period. It is also possible, allowing for the overlap at two standard deviations, that a single burial event is represented. If this is so, using the calibration curve to give a weighted average of all the dates (University of Washington, Quaternary Isotope Laboratory, Radiocarbon Calibration Programme), the most likely single event date would be 2096 ± 23. Stable carbon isotope measurements have been carried out on nine of the skeletons and range from -16.8 to -18.8 ‰ (Sealy *et al.* 1992). Although Faraoskop is situated roughly midway between the coast and the interior mountains the skeletons have $\delta^{13}C$ values which reflect only a small marine food intake. The values in fact suggest largely terrestrial diets and are very similar to those reported for skeletons from the Olifants River Valley (Sealy & van der Merwe 1987; Sealy *et al.*1992)

Preservation of the skeletons was extremely variable ranging from exceptional, as in the case of UCT 385 where the skin and ligaments of one foot were still intact, to very poor (Alder 1988). Four of the individuals were virtually complete whilst the remainder were incomplete post-cranial specimens. There were nine adults, two juveniles and one fragmentary skeleton of indeterminate age (Alder 1988). Details of the sex and age at death are listed in Table 16. One of the most interesting aspects of the burial assemblage was the lack of skulls, a total of twelve individuals yielded only six crania. None of the five skeletons excavated from the hole on the southern side of the site had crania. It is possible that the landowner removed the skull from the uppermost burial (UCT 394) as this skeleton showed signs of interference but the underlying four specimens appeared undisturbed by recent digging and the crania must have been removed sometime during antiquity. This may reflect an attitude towards burial practice although no ethnographic evidence could be found to support this and no similar examples have been reported (Inskeep 1986).

DISCUSSION

Despite the problems caused by the prior removal of key deposits from the back of the shelter as well as the intensive burrowing by animals Faraoskop remains an important site due to the long sequence and the fact that it is the only excavated site in the south-western Cape, apart from Elands Bay Cave, with terminal Pleistocene deposits. From the point of view of interpretation, there

are a number of distinctive trends in the artefactual and faunal record which reflect, at least in part, the changing role of the site through time.

The terminal Pleistocene deposits, as represented by layers 4 and 5, contain a stone artefact assemblage characterised by low numbers of formal tools and large amounts of waste material. Although bladelets never achieve dominance over flakes they are present in significant numbers in comparison with the Holocene levels. This is clearly shown in Table 17 where the flake to bladelet ratios are expressed. Similar results were recorded at Elands Bay Cave (Parkington 1977) and at Byneskranskop in the southern Cape (Schweitzer & Wilson 1982).

Table 17. Ratio of flakes to bladelets.

LAYER	1	2	3	4	5
FL:BL	17.2:1	12.6:1	28.0:1	4.5:1	5.4:1

The other clearly defined trend registered in the Pleistocene stone tool assemblage is the change in raw material frequencies with hornfels becoming more common in layers 4 and 5, mainly at the expense of silcrete and CCS, and with a similar increase in quartzite in layer 5. These raw material trends are best seen in Table 18 where the blanketing effect of chips has been avoided. The highest percentages of hornfels are actually registered in layer 3 but in this case the sample size is too small to admit a definitive reading of the results.

certain is the observation that along the western Cape coast the sea level was at least 100 m lower than today and the shoreline some 35-40 km further away (Parkington 1988). The exposed bedrock was probably an undulating Malmesbury Shale partially covered by Cenozoic sands (Rogers 1987). Faraoskop, at this point in time, would have been completely isolated from the sea and have faced onto a coastal plain some 75 km wide. Elands Bay Cave, currently a coastal location, would have been in a situation similar to Faraoskop today with the sea some 35 km distant.

The bulk of the Holocene deposits consist of a series of ash bodies (layer 2) which span the period about 4400 to 2000 BP. As at the Klipfonteinrand site (Nackerdien 1989), the large consolidated ash bodies clearly pre-date the arrival of pastoralists, between 1900 and 1600 years ago, in the south-western Cape (Yates *et al.* in press). Similarly, the majority of adzes from the excavated sample at Faraoskop come from the upper units of layer 2 (c. 2500 to 2000 BP) which suggests that use of plant food staples amongst hunter-gatherers commenced prior to the introduction of pastoralism. Similar adze frequencies have been recorded at Klipfonteinrand (Nackerdien 1989) and Andriesgrond (Anderson 1991). Very few backed pieces were recovered from layer 2, or from the Faraoskop assemblage as a whole, which is in direct contrast to the assemblages characteristic of the large open deflation hollow locations (Manhire 1987). This suggests that the ash bodies are not contemporary with the occupancy of the majority of the deflation

Table 18. Raw material composition of waste category (excluding chips).

LAYER	QTZ		QTZITE		HORNFELS		SILCRETE		CCS		OTHER		TOTAL
	n	%	n	%	n	%	n	%	n	%	n	%	
1	605	71.0	44	5.2	60	7.0	107	12.6	21	2.5	15	1.8	852
2	628	70.2	39	4.4	33	3.7	153	17.1	18	2.0	23	2.6	894
3	37	52.9	2	2.9	27	38.6	4	5.7	0	0.0	0	0.0	70
4	1193	69.2	105	6.1	313	18.2	75	4.4	14	0.8	23	1.3	1723
5	745	68.9	101	9.3	133	12.3	85	7.9	4	0.4	13	1.2	1081

The Pleistocene faunal record shows two major shifts of emphasis from the Holocene. Increased tortoise predation, particularly in layer 4, is demonstrated by an increase in overall numbers of individuals (Table 13) as well as relatively higher weights of tortoise carapace (Table 19). There is also an increase in the weight of mammal bone (Table 19) which, as discussed earlier, is mainly a reflection of the increase in the number of large bovids. As with Elands Bay Cave (Parkington 1988), the other dietary indicator is the high frequency of ostrich eggshell fragments in the period 11 000 to 10 000 BP. This presumably indicates the importance of ostrich eggs as food as well as their use as water containers and decorative items. Examples of worked OES fragments and flask mouth fragments certainly reach their highest numbers in layer 4 (Table 8).

During the period represented by the Pleistocene deposits (16 000 to 10 000 BP) there is a suggestion, as discussed earlier, of cooler temperatures and more extensive grass cover. This may, in part at least, explain the patterns recorded in the faunal assemblage. More

hollows and that a pre-4000 BP date is probable for the latter. The layer 2 ash bodies do, however, overlap temporally with the very large open shell middens characteristic of the Elands Bay coastline (Parkington *et al.* 1988).

The upper units (layer 1) which post-date 2000 BP, although lacking any prominent grass bedding patches, do conform to the general pattern established for what are known as bedding and ash sites in the south-western Cape. These sites are characterised by the presence of a main ash concentration associated with wads of grasses identified as sleeping areas (Parkington & Poggenpoel 1971). The spatial arrangement at these sites is usually predictable with a centrally placed hearth surrounded by arcs of bedding grasses placed close to the back wall of the cave or shelter. The De Hangen site (Parkington & Poggenpoel 1971) typifies this pattern which has subsequently been recorded at over 100 sites in the south-western Cape (Spatial Archaeology Research Unit records).

Although Faraoskop is located on the

Table 19. Weight per unit volume of tortoise carapace and mammal bone from square C3.

Layer	Buckets	TORTOISE		MAMMAL	
	n	g	g/100bkt	g	g/100bkt
1	3.0	182.3	6076.7	60.4	2013.3
2	14.5	247.7	1708.3	117.6	811.0
4	26.0	4159.1	15996.5	1403.1	5396.5
5	14.0	1565.4	11181.4	535.9	3827.9

sandveld/mountain interface the post 2000 BP deposits have more in common with bedding and ash sites in the mountains than at the coast. The percentages of scrapers and adzes in layer 1 as well as the cultural assemblages (Table 8) are very similar to the pottery-associated levels of sites in the Olifants River valley (Anderson 1991). Also, the types of geophytes recovered as well as the $\delta^{13}C$ values for the human skeletons (Sealy *et al.* 1992) further indicate that Faraoskop is essentially an inland site.

The two most unusual aspects of Faraoskop, at least as far as the south-western Cape is concerned, are the collection of special finds and the large number of human burials. The two questions which need to be addressed concerning these aspects are, firstly, what is the most likely provenance of the material dug out from the back of the site by the landowner and, secondly, what relationship, if any, exists between the burials and the "cache" of special finds recovered by the owner of the site.

One clue concerning provenance is supplied by the formal tools from the "dumps" (these refer to the series of mounds left on the surface by the landowner after he had removed the skeletons from the back of the shelter) which are listed in Table 6. The fact that no backed pieces were recovered and that fairly high numbers of adzes and scrapers are represented, in percentages similar to layers 1 and 2 suggests that the bulk of the deposits removed from the "hole" came from these layers.

As to the other question, it seems probable, for a number of reasons, that the special finds were not actually burial goods. Although skeletons in the southern Cape have been found with adornments (Inskeep 1986; Hall & Binneman 1987) there are no records of comprehensive burial goods in the entire western Cape. Likewise, the five skeletons recovered during the 1987 excavation had no associated finds. A more likely scenario is that the "cache" was recovered from bedding layers above the skeletons. Some support for this is supplied by the presence of grass fragments found adhering to the large piece of sewn leather illustrated in Figure 11.

The unusual nature of the "cache" is shown by the presence of several items that did not occur at all in the excavation. These include short strings of OES beads, shell pendants, perforated shells, whole shells with ochre and arrow shafts (Table 20). These items do, however, occur at various other sites in the south-western Cape. Ostrich egg shell beads are ubiquitous throughout the area and short strings of beads have been recovered from several locations such as Diepkloof Rock Shelter

Table 20. Cultural assemblages from the landowner's dump and hole.

ITEM	DUMP	HOLE
POTTERY		
Fragments	4	-
BONE		
Worked bone	2	16
Bone shavings	1	-
BEADS		
OES beads	150	15
OES bead strings	3	2
Seed beads	8	-
Iron beads	1	-
OSTRICH EGG SHELL		
Decorated OES	1	-
MARINE SHELL		
Worked	33	8
Perforated	11	2
Whole with ochre	4	1
Shell pendants	2	1
WOOD		
Worked wood	3	3
MISCELLANEOUS		
Reeds	17	12
Twine	3	4
Leather	1	±8
Arrows	-	4

(Parkington & Poggenpoel 1987) and Putslaagte (Halkett 1991). The latter site is of note as it produced a string of heavily ochred beads with ochre "spacers" between each bead.

As with ostrich egg shell beads, marine shell is widely dispersed, even at sites in the Cape Fold Belt mountains which are more than 50 km from the sea. The shells appears to have been imported for use as decoration or tools as worked shell is fairly common and shell pendants also occur, particularly at sites in the Olifants River such as Andriesgrond (Anderson 1991) and Renbaan Cave (Kaplan 1987). These linkages with coast are not restricted to the last 2000 years as shell pendants are also present in the much older deposits at the Klipfonteinrand 1 site (Thackeray 1977). Various types of bone artefacts have also been recovered at all of the bedding and ash sites which have been excavated in the mountains. Bone points and awls were present in some numbers at De Hangen (Parkington & Poggenpoel 1971) and Renbaan Cave (Kaplan 1987). Bone tubes are less common but examples similar to those from Faraoskop were also recovered from both of these sites.

Amongst the miscellaneous finds, lengths of twine or string occur at several sites with the most comprehensive collection coming from Diepkloof Rock Shelter where 31 pieces of cordage were recovered including several knotted fragments (Parkington & Poggenpoel 1987). Similarly, leather fragments are not uncommon and pieces of what was possibly a sewn garment with sinew

stitches were recovered from De Hangen (Parkington & Poggenpoel 1971). Less common are reed arrow shafts with the best examples coming from De Hangen (Parkington & Poggenpoel 1971) and Diepkloof Rock Shelter (Parkington & Poggenpoel 1987). At the former site, a sinew-bound arrow nock was recovered whilst two, nocked reed shafts were found at the latter site. Although similar to the Faraoskop examples none showed any traces of fletching. The Faraoskop arrow shafts do however show a close resemblance to some of the fletched arrows from pre-1920 ethnographic collections (Deacon 1984).

It is obvious from the above that, with the exception of the fletched arrows, none of the Faraoskop finds are unique to archaeological contexts and that all the items described are widely distributed at sites throughout the south-western Cape. What makes the Faraoskop finds unusual is that most of the objects described were intact apart from minor damage caused by their removal from the site. The other point of note is that, according to information supplied by the landowner who removed them, all the items were recovered from a single location. This suggests they were in fact cached rather than discarded.

CONCLUSIONS

The most important features of Faraoskop Rock Shelter, within the regional context of the south-western Cape, may be summarised as follows:

1. To date, it is the only excavated site situated on the sandveld/mountain interface midway between the coast and the interior mountains.
2. Apart from Elands Bay Cave, it is the only site so far excavated in the south-western Cape with substantial late Pleistocene deposits.
3. The presence of a large number of human burials within the shelter is atypical for the area.
4. The unusually rich collection of special finds which included fletched arrows and sewn animal skins.
5. The site provides further evidence that large, consolidated ash bodies occurred before 2000 BP in the south-western Cape.

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ARCHAEOLOGICAL INVESTIGATIONS AT THE BATTLEFIELD OF RORKE'S DRIFT, NORTHERN NATAL*

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ABSTRACT

Archaeological excavations were undertaken at Rorke's Drift with the aim of further elucidating the course of events at the mission station during the Anglo-Zulu War of 1879. The foundations of the British Commissariat store as well as the hospital burnt down by the Zulu were located. Walling, which can probably be linked to Fort Bromhead was recovered and a preliminary survey with a metal detector provided new information on the Zulu side of the war. Very few items were recovered which could unequivocably be linked to the battle despite the scale of military operations at the site both during and after the conflict of 22 January 1879.

INTRODUCTION

The Anglo-Zulu War of 1879 ranks as one of the most significant military encounters of the nineteenth century between British Imperial forces and a foe not as well-equipped from a technical point of view. Using a "number of minor incidents" (Laband 1992:11) along the Zululand border during the latter half of 1878, the British precipitated the war with one objective in mind, namely the destruction of the Zulu kingdom. Much was made of the heroic defence of Rorke's Drift at the beginning of the conflict in order to divert a public outcry following the devastating defeat suffered by the central column of the British army at Isandlwana. At Rorke's Drift a small group of British soldiers successfully defended their mission station-cum-military post against a large Zulu army resulting in the final allocation of no less than eleven Victoria Crosses, the highest number of VC's ever awarded to one regiment for a single action.

Rorke's Drift was named after James Rorke who purchased the approximately 1200 ha farm on the banks of the Buffalo (Mzinyathi) River in 1849 (Fig.1). A natural drift across the river at this spot enabled Rorke to trade with the Zulu kingdom to the north of the river (Morris 1965). He built his house and store on the slopes of Shiyane some 3 km from the ford. Rorke died in 1875 and his widow sold the property to the Swedish Missionary Society in 1878. The newly appointed missionary, Otto Witt, turned the store into a 'rude church' and settled his family into Rorke's house. Its strategic location on the Buffalo River prompted Lord Chelmsford to send the central column of the British forces through Rorke's Drift during his three-pronged invasion of Zululand in January 1879.

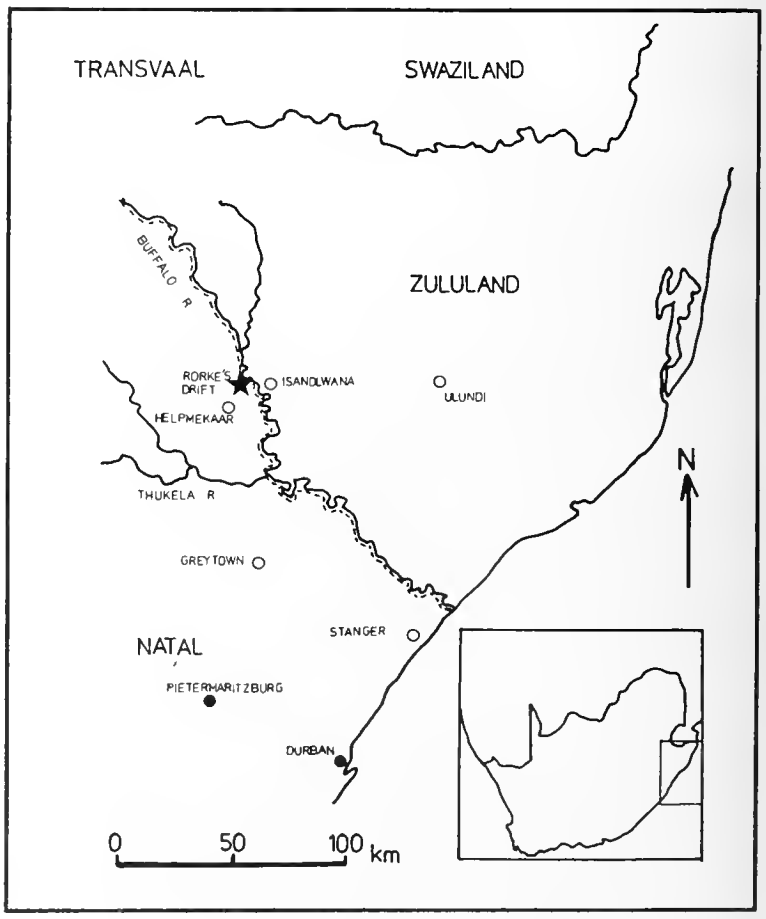

Fig. 1. The location of Rorke's Drift and Isandlwana on a map of northern Natal and Zululand, ca 1878.

Before the Central Column descended on Rorke's Drift, Assistant Commissary Chermside turned the church into a commissariat store and the missionary's 'eleven-roomed house' into a field hospital. Soon after 5 January 1879 some 4500 men, 300 wagons and carts and

1500 oxen arrived at Rorke's Drift and turned the place into a 'waste of trampled grass, mud and garbage' (Gon 1979:206). The troops crossed the river on the 11th January leaving behind B company of the 2/24th Regiment in charge of the stores at Rorke's Drift. On the 22nd January Lt. Chard, who was in charge of the ponts across the river, received note of the annihilation of at least one entire infantry battalion at Isandlwana, some 10 km from Rorke's Drift. He, together with Bromhead and Dalton, immediately set about fortifying the structures at Shiyane. Scouts sent to the top of the hill were able to watch a Zulu force of approximately 4000 men under chief Dabulamanzi (half-brother to the Zulu King, Cetshwayo kaMpande) taking snuff after crossing the river to attack the stores and hospital (Laband & Thompson 1983). Dabulamanzi had been under strict instructions not to attack positions across the border but the uDloko, iNdluyengwe, iNdlondlo and uThulwana regiments (Laband 1992), which had been held in reserve during the final attack at Isandlwana, were anxious to 'wash their spears' and eager for some of the spoils of war.

The British set up a temporary barricade of mealie-sacks, biscuit tins and meat boxes between the store and hospital, which have variously been described as 40 and 20 yards apart. Witt gave the dimensions of the store as 80 foot by 20 foot while the hospital was 60 foot by 18 foot in size (Bancroft 1991:24,25). Although the walls of the store are reported to have been of solid stone (Glover 1975), photographs taken of this structure soon after the battle indicate a combination of stone and brick (Fig.2). Both structures were loop-holed and barricaded by the troops. The hospital was described by Hook (Emery 1977:127) thus: "The ends of the building were of stone, the side walls of ordinary bricks and the inside walls or partitions of sun-dried bricks of mud." During the height of the battle, when hand-to-hand conflict took place in the hospital, holes were made in these inside partitions through which the British troops were able to escape.

During the battle itself some 20 000 rounds of ammunition were fired by the British soldiers (Barthorp 1985). The majority of these cartridge cases are likely to have fallen within the temporary barricades. The British used the Martini-Henry breech-loading rifle and, while some of the Zulu are reported to have owned obsolete firearms, such as muzzle-loading flintlocks (Glover 1975), these are considered to have had no significant effect on Zulu tactics (Laband & Thompson 1989). The hospital was set alight during the battle and the ruins offered cover to the few remaining injured Zulus the next morning. For this reason Chard ordered that the walls of the hospital be pulled down (Glover 1975). The stones of the walls were brought across to the storehouse to strengthen the redoubt.

The following day the British buried approximately 379 Zulu dead, according to Hook (Emery 1977:130), in two big holes in front of the hospital; Laband (1985) has suggested that they were tossed into grain-pits. The Zulu weapons and shields were collected and burned in a trench (Bancroft 1991). The British dead were buried in

Fig. 2. This photograph was taken after the site was abandoned and shows the Commissariat Store with the loopholed walls of Fort Bromhead (Killie Campbell Africana Library).

a small cemetary behind the hospital. It is the only feature on the present landscape which dates to 1897, and may be used as a reference point for the location of the store and hospital (Fig. 3). While some of the men were burying the Zulu dead, "the remainder brought in stones for reconstructing and strengthening the barricades" (Child 1978:37). On the 25th February it was reported that a "fort consisting of an eight foot stone wall is also being made at Rorke's Drift" (Emery 1977:141-142). The fort was narrow and rectangular, without bastions but with its walls *en cremaillere* (Laband & Thompson 1983). There are a number of photographs as well as a sketch of this fort which has become known as Fort Bromhead (Figs 4 & 5). According to Weallans (Emery 1977:123) there were some 600-700 men occupying the same extent of ground that 90 men had occupied during the battle. The commanding officer refused to allow anyone to sleep outside "being afraid the Zulus might sweep down on the place again" (Child 1978:39). Harford continues "To make matters worse we had a lot of rain, and the interior of the fort became a simple quagmire from the trampling of so many feet. Fatigue parties were employed for the best part of the day in carrying liquid mud away and emptying the slush outside" (Child 1978:38).

In March 1879 troops started with the construction of Fort Melvill on the drift in order to both protect the pont and move the troops out of the old fort which was very unhealthy. The majority of the troops moved out in April although some stayed on until the end of the war in July. It is not known when the walls of the old fort were finally dismantled although the defences of the area were finally abandoned in October 1879. Otto Witt returned and constructed a large house and church on Shiyane after the war (Mitford 1883). There are no records indicating whether the new mission house was built on top of the foundations of the hospital or whether the church was built on the ruins of the store. It would appear however, that the eight foot high stone walling of

Fig. 3 A photograph taken from Shiyane showing the British cemetary, the Commissariat Store on the right and the ruins of the hospital on the left near the tree (The National Army Museum, Chelsea).

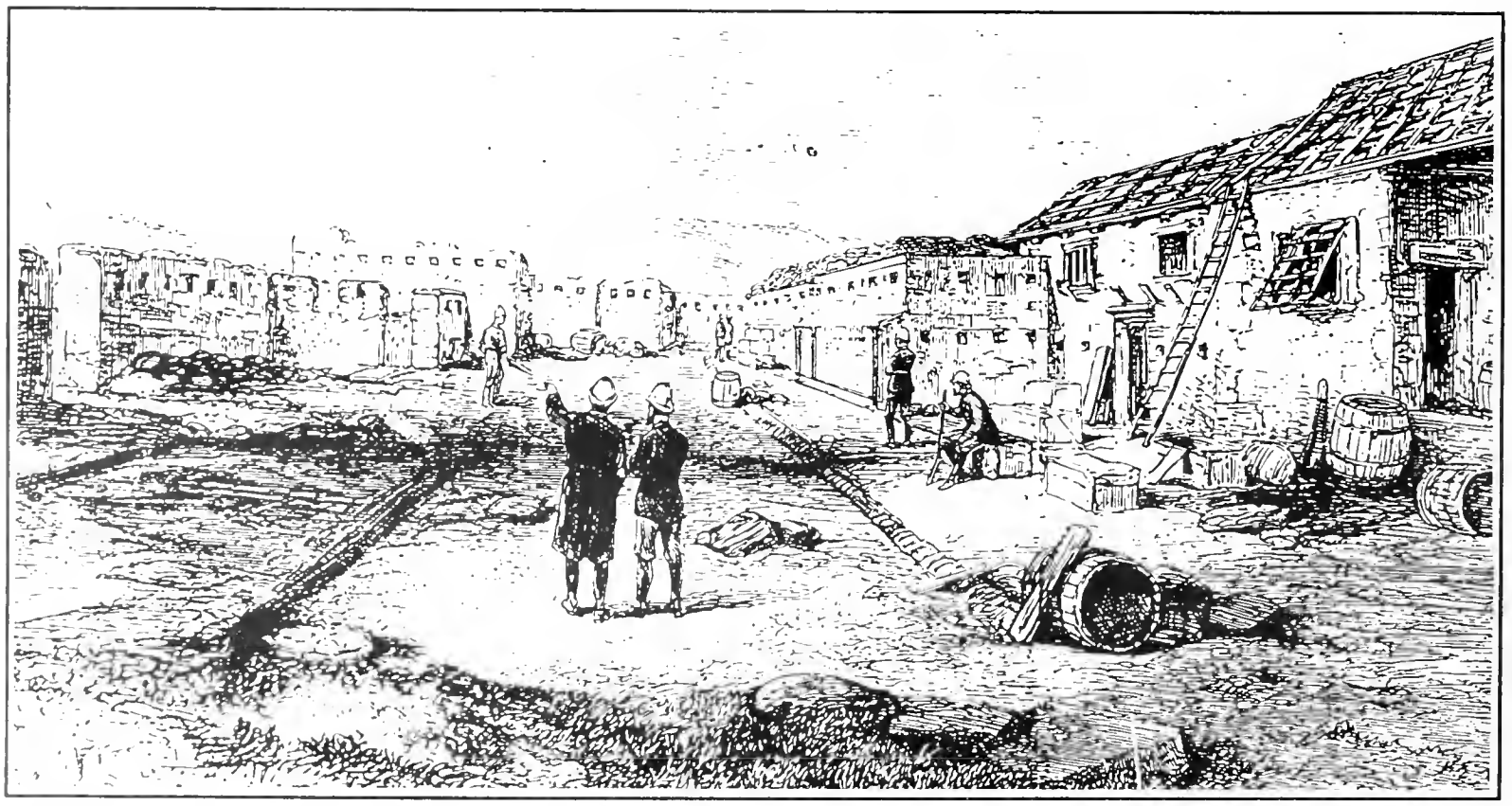

Fig. 4. A sketch (Illustrated London News) of the interior of the Fort looking in a north-easterly direction, with the Store on the right.

the old fort was demolished and the stone used in the construction of the new buildings.

Witt's house and church are still standing and while the latter structure continues to function in daily use the former has now been converted into a museum. The land on which the battlefield is located still belongs to the Evangelical Lutheran Church but has been let to the Natal Provincial Administration on a 99 year lease. The battlefield area was declared a National Monument in 1969.

AIM OF THE EXCAVATIONS

Prior to the conversion of the mission house into a museum the author was requested to undertake an archaeological research programme in order to establish the following:

1. The original position of the hospital;
2. The position of the commissariat store;
3. To determine whether there was any evidence to

Fig. 5. A photograph of the site after it was abandoned with the Store clearly visible on the left and the ruins of the hospital on the right (The National Army Museum, Chelsea).

substantiate the present position of stones which have been placed to demarcate the original lines of the battle of 22-23 January 1879;

4. To try and find the foundations of Fort Bromhead which was constructed on the site immediately after the battle;
5. To determine whether any evidence could be found for the position of Zulu snipers who apparently fired at the British troops from caves in the hillside of Shiyane.

Excavations were also considered to be of a rescue nature as significant artefacts or in situ features had to be recovered before they were destroyed by building contractors. Archaeological excavations commenced in September 1988 with subsequent fieldtrips in May 1989, March, June and August 1990. Members of the Evangelical Lutheran Community assisted with the excavations during the first three fieldtrips.

1. The location of the hospital foundations

To avoid confusion regarding this structure, some of the above history is briefly summarised. Rorke's house, subsequently occupied by Witt, became the field hospital during the Anglo-Zulu War. Burnt down by the Zulu it is believed that Lutheran missionaries returning to the site rebuilt their mission house on the foundations of the hospital. It is this house which has been converted into a museum.

Since the renovation of the mission house into a museum involved digging a one metre wide trench around the building to provide an underground drainage apron, this area was sampled first through the excavation of a number of random test pits, one metre square each (Fig. 6). Some 20 metres were excavated around the house but no trace of previous foundations was observed. The deposit around the house was nowhere very deep. At the back of the house the dark loam interfaced with a compact gravelly red clay at around 0,5 m, while the outer wall of the front of the house rests directly on top of the granite bedrock. Virtually no stratigraphic layering could be discerned. The deposit was not particularly rich anywhere except around the kitchen area where fragments of ceramics, glass and bone were recovered.

A number of trenches were then excavated inside the building. Since most of the rooms have wooden floors, excavations were limited to rooms with concrete floors. A comparison of the original floor plan of the hospital drawn by Lt John Chard (who was a Royal Engineer) with that of the plan submitted by Otto Witt when he rebuilt the mission house in 1882 indicates that the former was slightly smaller than the latter. Excavations inside the house in Room 7 uncovered several large quartzite stones which form a neat straight edge, as well as a more roughly constructed inner wall running at right angles (Fig. 7). These features probably relate to the foundations of the hospital. The deposit around these stones was rich in charcoal and pieces of melted glass which testify to the blaze relating to the battle itself.

2. The location of the Commissariat store

In order to locate the position of the British Commissariat store a trench was excavated at right angles from the present church across the battlefield toward the rocky ledge for a distance of some 12 metres (Fig. 8). As the aim of the excavation was to look for a specific

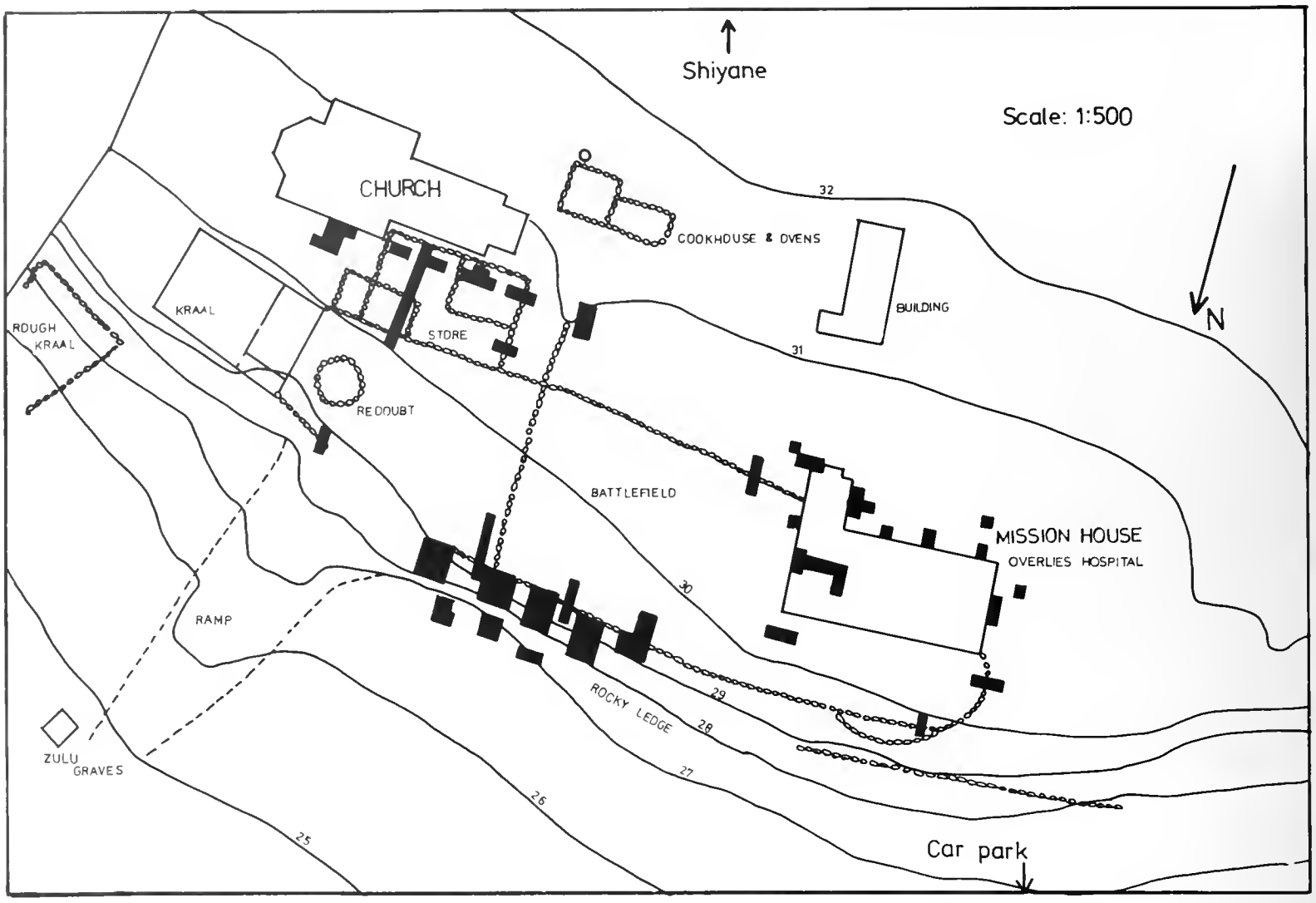

Fig. 6. A survey map indicating the position of the various features referred to in the text. The outline of the fortified area is shown as well as the position of the excavations.

feature, the trench was excavated to varying depths with picks and shovels and no sieving was undertaken. Close to the church the trench reached bedrock at about 1,2 m while near the end of the trench it was reached at only 45cm. This is because there is a pronounced slope down from the church to the kraal and the position of the original redoubt.

However, while excavating the trench some dressed stone blocks were recovered three metres from the church. Stratigraphically these stones are associated with a level of sandstone rubble and red brick some 50 cm from the soil surface. Most of the historic artefactual remains such as Martini-Henry cartridge cases and gin bottle fragments were found close to these stones. The excavation strategy was then altered to determine whether these stones were in fact the foundations of the store. Two square metres (called Extentions in my field notebooks) were uncovered to the west of the trench (Fig. 8). More dressed stones were uncovered at the same depth as the previous finds and clearly formed part of the same structure. This led to the excavation of Extentions 2, 3, 4 and 5 (Fig. 8).

Figure 9 clearly shows a well developed line of sandstone blocks, on occasions two stones high. In addition it is interesting to note the presence of decomposing red brick in association with these stones. It would appear that the store was built of both sandstone and red brick. With respect to Extention 2, large numbers of gin bottle fragments, rusted iron objects and china were found on the inside (i.e. south) of the line of stones. Excavations in Extentions 3 and 4, however, failed to locate any evidence of an interior floor within the structure.

After following the foundations in a westerly direction, further excavations were undertaken to the east at Extention 5. The excavation of 8 square metres revealed what would appear to be the one corner of the store. The corner is well built and more substantial than the foundation stones in the other excavated areas. In addition a roughly constructed stone wall angles out from this corner in a northerly direction (Fig. 10). It is suggested that this roughly built stone wall is the remains of the fortifications of Fort Bromhead. Figures 2, 3 & 5 show the 12 foot high walls built immediately after the battle linking the ruins of the hospital with the store and well-built stone kraal. The stones used for Fort Bromhead were probably used in the construction of the church, mission house and school buildings. The highest concentration of bone and Martini-Henry cartridge cases was recovered from the rubble layer in this excavated area.

It would appear that the clearly defined row of stones relate to the British Commissariat store and I would submit that the foundation stones are probably those of the outer or front wall.

3. Excavations on the battlefield

After establishing the position of the 'hospital' and

Fig. 7. Excavations in Room 7 of the house/museum indicate the interior wall of the original hospital as well as a portion of the outer foundation stones.

'store' a number of trenches were excavated to bisect the outer lines of the battlefield. Some trenches were sited along the southern margin while others were intended to sample the top of the rocky ledge to the north. Although the barricades were of a temporary nature, it was hypothesized that particularly dense numbers of cartridge cases and other military debris might indicate these lines. The absence of a clear stratigraphy on the battlefield itself suggests that both the levelling of the site prior to the construction of the new mission house and church in 1882 and gardening activities over a period of 100 years have destroyed much of the original stratigraphy. The dark loamy soil contained fragments of yellow clay, red brick lenses and the densest concentration of artefacts at depths of 0,3-0,5 m.

It was further hypothesized that artefacts relating to the battle and to the subsequent occupation of the site by British soldiers between February and March 1879 would have been dumped beneath the ledge and would thus be concentrated in this area. Three large areas were therefore excavated (Fig. 6) immediately below the ledge. Very little artefactual material was recovered from these lower excavations. The dark brown soil was very shallow and overlaid a sterile yellow clay. The deposit consisted mainly of recent builders rubble with virtually no historical material. An offical from the N.P.A. Work's Branch office in Dundee told me that during the centenary celebrations at Rorke's Drift in 1979 a bulldozer had been used to 'neaten' the area below the ledge. The soil from this area may have been used to construct the ramp onto the battlefield so that visitors to the site could have more convenient access to the battlefield during the celebrations. In addition he reported that members of the public had dug extensively at Rorke's Drift and at Fort Melvill during 1979 in search of artefacts relating to the battle and this is confirmed by newspaper reports from that time.

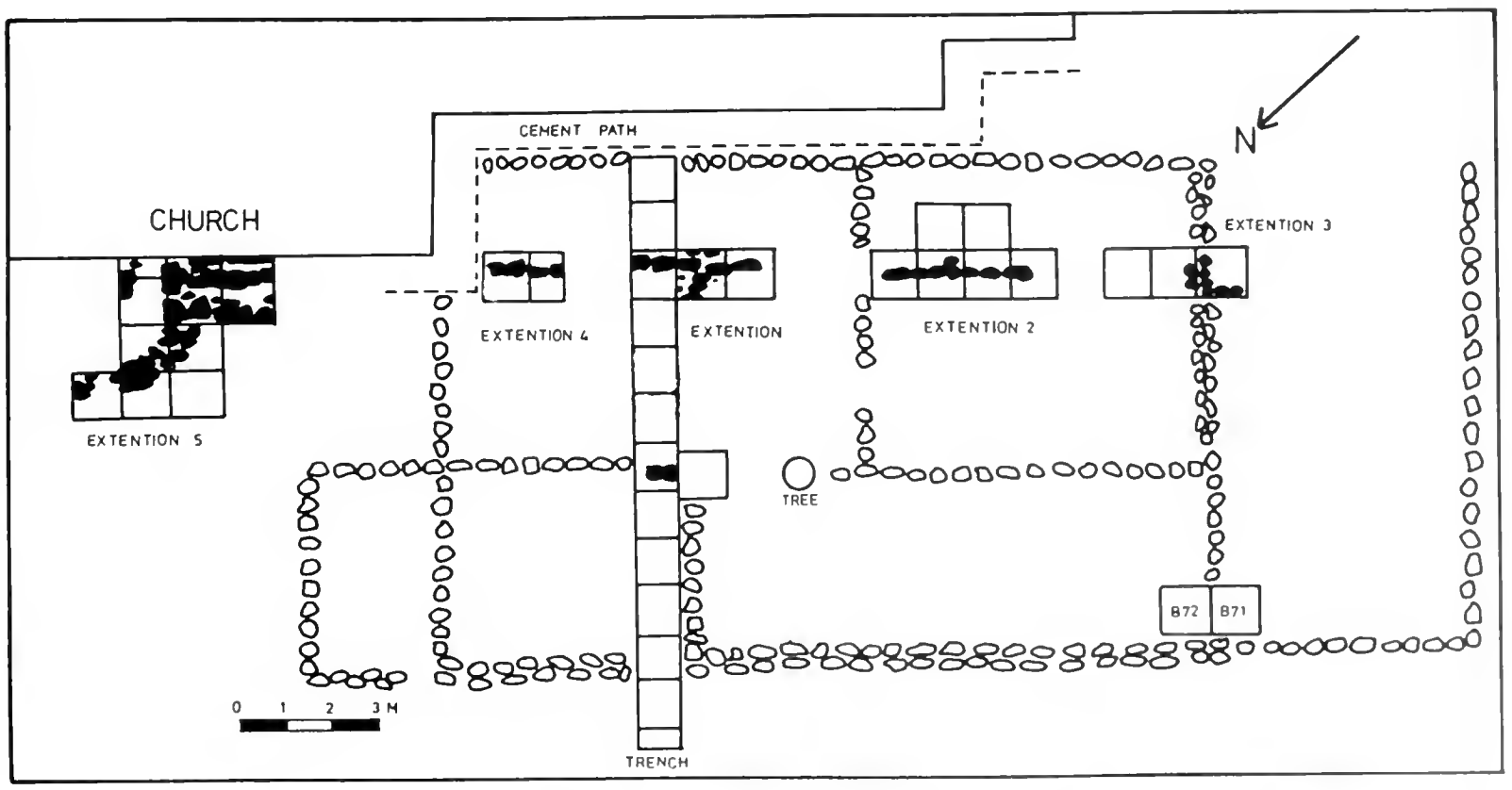

Figure 8: The excavations undertaken to determine the position of the British Commissariat Store are indicated.

Fig. 9. The foundation stones of the front wall of the Store.

Fig. 10. The corner of the Store as well as a portion of the walling of Fort Bromhead found in Extention 5.

4. The walls of Fort Bromhead

Sampling of the area adjoining the rocky ledge immediately to the east of the mission house was undertaken in 1988, then again in 1989 and 1990. The most extensive excavations however, were concluded in June 1990. Preliminary excavations above the rocky ledge in 1988 revealed a short section of stone 'paving'. Further excavations in 1989 toward the northern end of the ledge were not very promising but extensive excavations in 1990 appear to have located portions of stone walling belonging to Fort Bromhead. These excavations were variously called Areas as well as Upper Ledge 1-5 in my field notebooks.

It was hoped that Area 6, which lies next to the ramp leading up to the rocky ledge on the battlefield, would provide some evidence of the gate of Fort Bromhead. However, only recent builders rubble was recovered indicating that this area has been disturbed, perhaps during the construction of the ramp to the site during the centenary celebrations of 1979.

A number of areas were excavated in order to extend the stone 'pathway' first found in 1988 in squares Zd 49 and Zd 50. The first three areas (Upper Ledge 1,2 and 3 in my notebooks) contained some stone walling but were not very rich in artefacts. Area 4 (situated next to the concrete plinth), however, was rich in green bottle glass pieces. Two badges, a brass Sphinx and a brass Crown were found here. It was initially thought that the presence of a .577 slug in this area probably indicated extensive disturbance to the deposit but this view has since been re-evaluated.

The most extensive evidence for stone walling was found in Area 5. Quartzite cobbles and red brick seemed to form part of a wall (Fig. 11). The excavations were enlarged to expose more of this feature. Associated with the walling were several cartridge cases, glass, bone and iron objects. It would appear that this may be the remains of the front wall of Fort Bromhead. The wall was left in situ, photographed and then covered in plastic sheeting and sand. Portions of Fort Bromhead were therefore found along the front (northern portion) of the battlefield as well as adjoining the back corner of the British store.

5. A metal-detector survey of the slopes of Shiyane

One of the aims of the archaeological research had been to attempt to gain new insights into the Zulu side of the battle. With the possible exception of the trade beads no artefacts were recovered which could unequivocably be linked to them. With this is mind, we determined to survey the slopes of Shiyane, in particular examining the caves and ledges from which the Zulu are reported to

Fig. 11. The front walling of Fort Bromhead on top of the rocky ledge.

have fired on the British. Most of the mortalities suffered by the British were as a result of Zulu sharpshooters firing from Shiyane. Since this area has been visited by tourists for over a hundred years, we decided that a metal-detector survey would be the most economical means of recovering buried spears and spent bullets. At least three slugs of a .577 calibre were recovered from a cave overlooking the battlefield. They were within a metre of each other and were probably dropped by the same sharpshooter. The calibre of these bullets matched those of a wax-moulded bullet recovered from the front ledge of the battlefield. Furthermore, during the construction of a car park in front of the battlefield similar wax-moulded, fired slugs were recovered. These discoveries suggested that we were recovering bullets which had been used during the battle of 1879. The fact that many of these slugs were recovered from the car park area (to the north of the battlefield) confirms reports that the Zulu were overshooting their targets.

One of the spent bullets from the car park area had three rifling marks which suggested to a gun expert that it had been fired in an Enfield rifle. This would confirm observations in an article on firearms in the Zulu kingdom by Guy (1971), that muzzle loaders were fairly common in the period up to the 1870's. Both percussion Enfields and Tower muskets could be purchased cheaply by the Zulu from suppliers in Mozambique, but these weapons were frequently obsolete and ineffective.

It is tempting to link the percussion caps found on the front of the rocky ledge to muzzle loaders used by the Zulu during the battle. However, Mechanick (1979) has claimed that some of the Natal Native Contingent were still armed with muzzle-loading, percussion Enfields. The percussion caps may well have been dropped prior to the battle, before the NNC fled the scene. However, they may perhaps also be linked to James Rorke's occupation of the site. His will of 1875 lists a Rifle, a Dble (double gun?) gun and a revolver with cartridges. We may also assume that since Rorke was a trader he probably dealt in arms and ammunition.

The metal-detector survey also recovered a number of Martini-Henry slugs in the vicinity of the caves on Shiyane suggesting that the British soldiers were shooting a distance of 400 yards or more with their rifles.

ARTEFACTUAL REMAINS

Fauna

Large samples of faunal remains were recovered from the excavations. Areas around the mission house as well as close to the rocky ledge were particularly rich in what appeared to be sheep, goat and cattle remains. The historic accounts indicate that livestock was slaughtered for the soldiers at the front of Fort Bromhead. I have tentatively identified pig and baboon from the site. Other finds include a piece of ivory tooth and a grooved and snapped bone tube.

Metal

Two iron hoes were recovered behind the mission house next to doorways which have since been bricked in. The hoes were planted vertically in the soil and were used as shoe scrapers by the missionaries. Rusted nails were most commonly recovered. Other finds include buttons, buckles, tins, a spoon and a fork handle, a penknife, a trowel, iron bars, the a heel of a boot, watch chains, brass razor blades, regimental buttons, small brass containers and coins including an 1862 Queen Victoria half penny. The sphinx badge (of the 24th regiment) would probably have been worn on the collar (Fig. 12), while the crown badge had probably broken off a helmet (Fig.13).

Fig. 12. The Sphinx badge.

A total of 33 Martini-Henry cartridge cases and 7 unfired Martini-Henry bullets are all that bear testimony to the battle (Fig. 14). Eleven percussion caps were found to the front of the rocky ledge (Fig. 15). Unusual calibres include a .38 Smith and Wesson cartridge. One 12-bore shotgun firing pin was recovered from Extention 5 among all the Martini-Henry cartridges suggesting that other firearms may also have been used during the battle. It is possible that this cartridge dates to the occupation of the site after the battle as many officers owned their own hunting rifles. The wax-moulded slug of .577 calibre (Fig. 16) recovered from the rocky ledge matches slugs found in both a cave on Shiyane and in the car park area

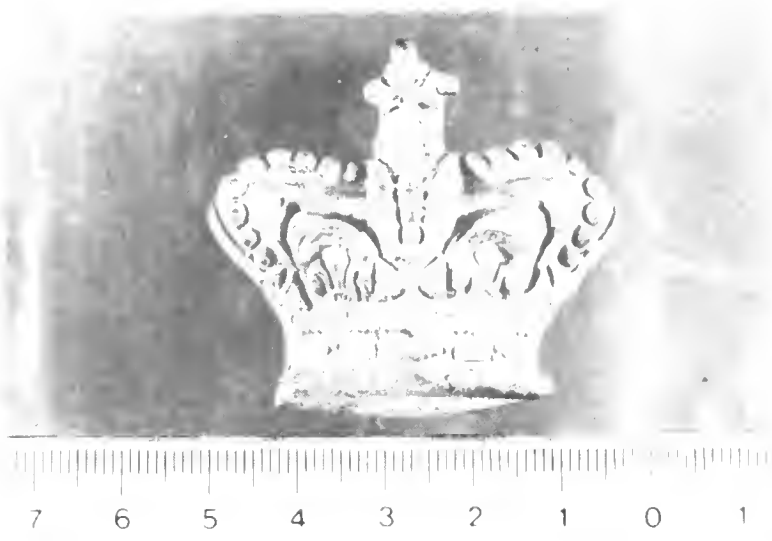

Fig. 13. The Crown badge.

Fig. 14. Martini-Henry cartridge cases.

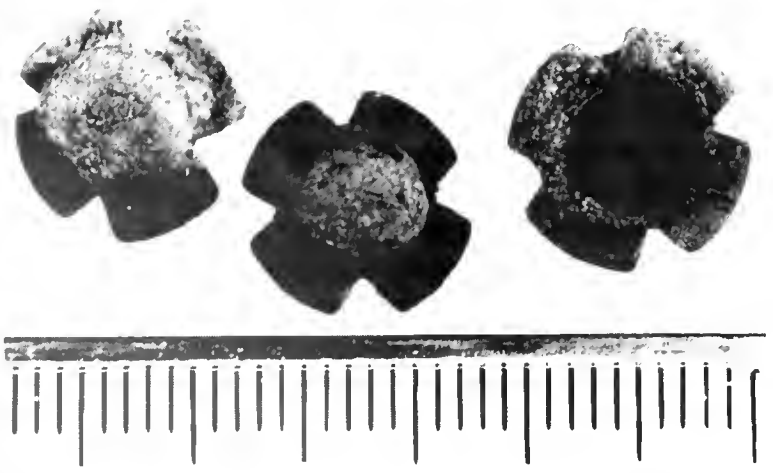

Fig. 15. Percussion caps.

to the front of the actual fortified area. They present new light on the Zulu side of the battle.

Glass

Of interest were the many pieces of melted glass around the kitchen area of the mission house and under the floor in the excavated room. They suggest a high temperature which may be related to the fire in the hospital. Generally most of the glass fragments from the excavation were either olive green or aqua coloured. One bottle stopper bore the embossed letters of Lea & Perrins. The majority of glass fragments recovered near the store were dark green and probably derive from spirit bottles. Two square-based gin bottles were partially reconstructed; one had the name 'Schiedam' embossed on the side, another had 'Schiedam' embossed on a shoulder seal.

Fig. 16. A .577 slug from in front of the battlefield.

Ceramics

Large numbers of ceramic pieces were recovered, the majority from around the mission house and very few from the store area. Several potsherds were found around the mission house. They are all undecorated and it is impossible to determine whether they predate 1849 or are contemporary with the historic occupation. However, the sherds are most common around the kitchen area and were found together with imported glass and china fragments. This may indicate that either Rorke or the later missionaries used locally fired clay pots or employed people who did.

A large number of stoneware, earthenware and porcelain pieces from many different vessels were recovered. The only two trademarks identified were those of 'Doulton, Lambeth' and Messrs T.C. Brown-Westhead, Moore & Co. of Cauldon, which may be dated between 1872 and 1904. In general the collection is difficult to identify or date. Many of the ceramics show signs of being burnt. Other ceramic finds include fragments of clay pipe stems (the names Limerick, Glasgow and Ducall were incised on three of the stems) and bowls, a fragment of a china doll's head and fragments of an ointment jar lid.

Stone artefacts

The stone artefacts may all be described as Middle Stone Age and were recovered from the basal red gravels beneath the historical material. The morphology of the

blades and flakes suggest they probably pre-date 30 000 BP. Most of the artefacts are on indurated shale and are heavily patinated.

Miscellaneous finds

A number of glass beads were found scattered around the western section of the mission house.They probably all relate to a single beaded object. Apart from this several large, purple glass beads were also found on the battlefield.

CONCLUSIONS

All the aims of the archaeological project at Rorke's Drift were achieved but with varying degrees of success. Sections of the foundations of the hospital were recovered under the floor of room 7 in the present mission house-cum-museum. Charcoal pieces and fragments of melted glass confirm that this structure overlies the ruins of the field hospital burnt down by the Zulu.

The foundation stones on the front wall of the British Commissariat store were also located. It appears to have been largely situated underneath the present church which would mean that the marker stones used to delineate the position of the store are incorrectly placed. They should be moved back (i.e. southward or toward Shiyane) some 8 metres. Excavations have uncovered 20 metres of the front foundations of the store and it is therefore quite possible that the store could have been 80 foot in length as described by Otto Witt.

It is clear that the very intensive occupation of the battlefield for some three months after the battle probably resulted in a fairly complex stratigraphy. However, the deposit in and around the battlefield appears to have been subject to considerable disturbance right up to 1979 and it now seems unlikely that much would be gained by more extensive excavations of the area.

In addition to finding the position of the store, excavations also appear to have uncovered at least a portion of the walls of Fort Bromhead. A section of roughly constructed stone wall was found adjoining the back corner of the store while a substantial portion of walling was also uncovered on the edge of the rocky ledge.

The recovery of a .577 slug on the ledge sheds a new light on the Zulu side of the battle. It is of the same calibre as the slugs found in the car park area in March 1990 and the three slugs found in a cave on Shiyane. It would appear that the Zulu were using heavy calibre Enfield rifles or Tower muskets. It is imperative that the rifling marks on the slugs be re-examined by a firearms expert in order to verify this. One important discovery which resulted from the metal-detector survey is that it appears that the Zulu were indeed overfiring the battlefield. It is recommended that another survey be undertaken of the slopes of Shiyane once the grass has been burnt. Nevertheless, it seems unlikely that the present sample will be substantially increased since I believe that most of the material has been collected by visitors to the site during the last 100 years.

Aerial photographs of the mission area have highlighted some unusual features such as cross-hatching in the field in front of the mission house and circular features near the turnstile in front of the rocky ledge. These features may be due to the British occupation of the area in 1879 but they could equally be ascribed to the agricultural activities of the missionaries; only archaeological research will solve this issue. Furthermore, I believe research should also be aimed at integrating the site with Fort Melvill, the military road to Isandlwana, May's Hotel, Sihayo's kraal and Isandlwana itself as Rorke's Drift should not be viewed in isolation.

The excavations at Rorke's Drift are a salutary reminder of the significant changes which can occur at a particular site over a very short period of time (archaeologically speaking). Despite the scale of military conflict at Rorke's drift, very few military items were recovered which support the historical accounts.

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EUROPEAN AND ORIENTAL CERAMICS FROM ROCK SHELTERS IN THE UPPER SEACOW VALLEY*

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ABSTRACT

Nineteen imported vessels and two clay pipes from six rock shelters in the upper Seacow River valley, northern Cape Province are described and, where possible, dated. Their contexts and production dates suggest that all but one were probably acquired between 1840-1880 by Sun èi (Bushman) retainers, shepherds and field staff from nearby farmsteads. Although many farmers handed out items to Sun èi retainers from ca 1810 onwards, ceramics were evidently seldom among these gifts. The sudden appearance of ceramic fragments post-dating 1840 in the rock shelter fills corresponds with the establishment of village stores on the rim of the valley, at a period when inexpensive British wares were flooding world markets. Oriental ginger jars, otherwise difficult to date, were also found in this narrow dating range.

INTRODUCTION

European stockfarmers began to seize the upper Seacow valley (Fig. 1 inset) between 1770-1774 from its Bushman inhabitants, whom Gordon was told in 1777 were named Sun èi among other variations (Raper & Boucher 1988:79). The first farms in the valley headwaters were briefly abandoned at the height of the Boer/Bushman war for control of the Sneeuberg (1768-1798), but soon reoccupied (South African State Archives 1770-1775). With the British occupation of the Colony, Earl Macartney's pacification programme was zealously pursued, and farmers were urged to make peace with the Sun èi by regular gifts of meat, tobacco, trinkets, livestock and other useful items (Thompson 1827:61; Moodie 1959:35, 113-118). This was so successful that Sun èi bands were soon making the farmhouse werf the equivalent of a long term base camp from which to launch their foraging rounds (Hutton 1887:39; Moodie 1959:50). After a land rush in 1809 that saw the last of the good waterholes in the upper valley taken by Europeans (van der Merwe 1937:192), there were few Sun èi who did not have some contact with farmers. Between 1825-1840, travellers reported increasing numbers of farm Bushmen acting as herders and servants, but there were less frequent encounters with the Sun èi going about their normal foraging rounds in the veld (e.g. Thompson 1827:60-61; Steedman 1835:147).

During this period European items, including ceramics, were fetched to the farmstead by arduous wagon trips across the Sneeuberg to Graaff Reinet (Lichtenstein 1815:1), but increasingly via travelling "smousen" who transported household goods from Algoa Bay and Cape Town (Campbell 1822:326). After 1840 the farmers' supply lines began to shorten as small towns sprang up around the upper valley, first Richmond (1844), then Middelburg (1852) and finally Hanover (1877). Droughts, dwindling game supplies, and farm failures drove many farm Bushmen to the towns where they were decimated by disease and alcohol. They gradually lost their identity in the mixed-race slums attached to those places (Gutsche 1968:135).

Archaeological traces of these historical events abound in the form of (mainly 19th century) farmstead ruins and related structures that await systematic investigation.

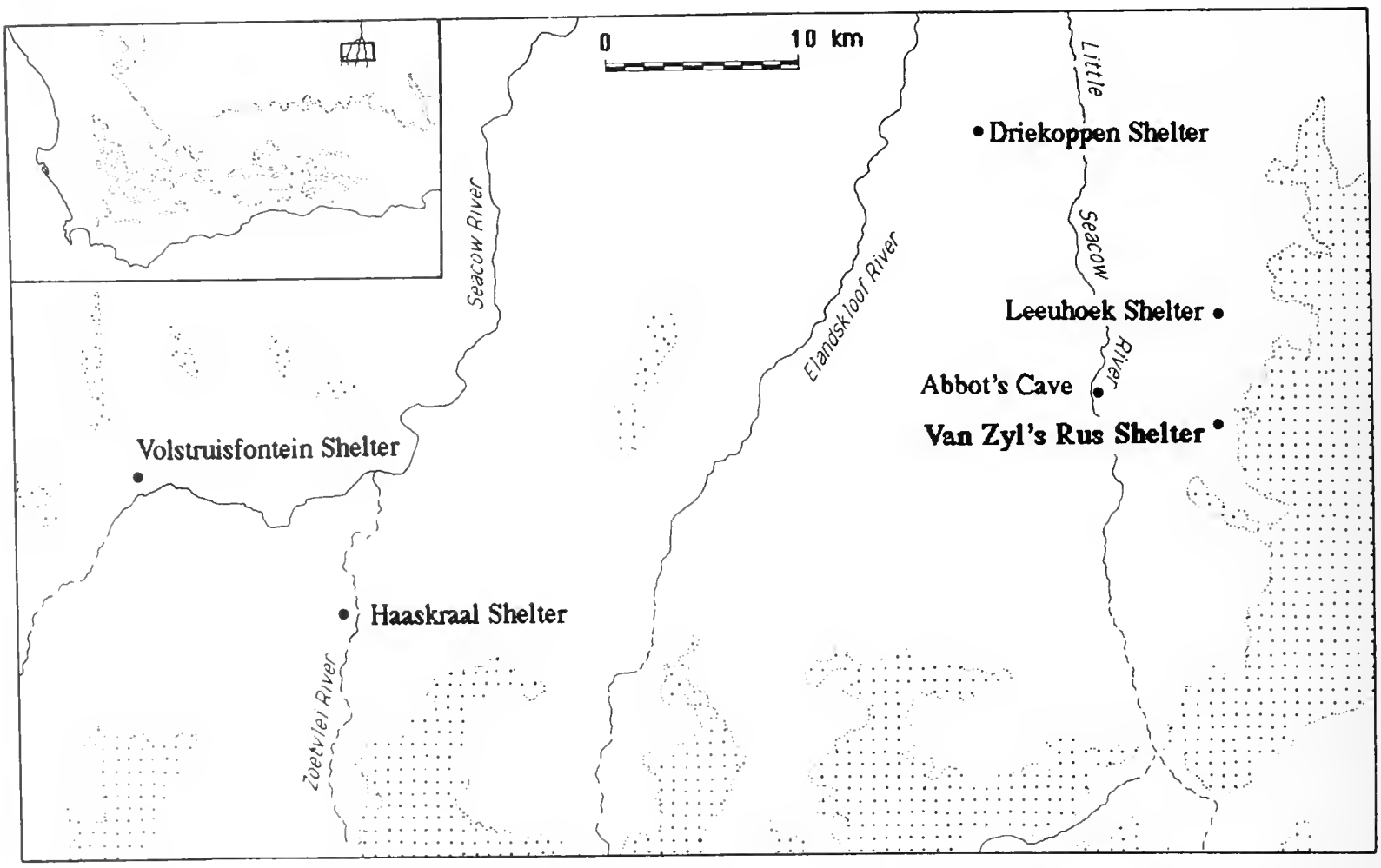


Fig. 1. Location of the upper Seacow valley, including the six rock shelters containing imported ceramics. The stippled areas are mountainous.

Fainter signals of some of these events have been detected in the uppermost layers of nine rock shelters, all of which yielded small assemblages of European items among the rapidly dwindling numbers of stone artifacts and other items of native material culture (Sampson *et al.* 1989). In most cases these post-Contact layers are marked by rapid decreases in the density of wild faunal remains, by the first appearance of sheep and other livestock and by dense sheets of ostrich eggshell fragments, that reflect increasing Sun èi dependence on nest robbing (Sampson in press).

The first European items to appear in these post-Contact layers are glass trade beads, argued elsewhere to have been given to the Sun èi between 1810-1840 (Saitowitz & Sampson 1992). If so, then they must reflect a material trace of the Macartney peace-keeping programme. However, the strength of that argument depends largely on the mid-19th century date ascribed to overlying bead assemblages. These later assemblages look quite different and are more widespread in the upper valley. In two shallow, post-Contact shelter fills the later bead assemblages are associated with European ceramics, the dating of which is crucial to the whole case for the bead chronology. Here, we review the claim for dating the ceramics to 1840 and later. We also review the possible reasons why only one sherd is datable to earlier times.

SHELTER FUNCTION AND CERAMIC INTAKE

The archaeological record is uneven in that ceramics flowed into Volstruisfontein and Leeuhoek shelters (Fig. 1) at very much higher rates than into four other shelters (Fig. 1 & Table 1). Reasons for this may be that they were put to different uses at various times. For example Volstruisfontein was located 3.3 km from the nearest pioneer farmstead. Not very useful after 1810 as a base from which hangers-on could monitor potential hand-outs, it would become attractive later to farm Bushmen in charge of the farmer's flocks. It could have continued to serve as a shepherds' camp until the coming of wire fencing soon after 1880 (Noble 1886:241-243).

By contrast Leeuhoek overlooks the farmstead of that name, so it would have been ideal for hangers-on living off the farmer, and subsequently for housing farm servants. It also has a commanding view of an early wheat field. A slit above the dry-stone wall, built almost to the lip of the roof, could have served for firing weapons on the marauding baboons that devastated crops

Table 1. Ceramic density compared with distance to nearest farmstead.

	NISP	MNI	Area (sq m)	Density (NISP/sq m)	Density (MIND/sq m)	Distance (km)
Leeuhoek	78	12	10	7.8	1.2	0.2
Volstruisfontein	6	3	3	2.0	1.0	3.3
Van Zyls Rus	1	1	6	0.16	0.16	2.5
Driekoppen	2	2	12	0.16	0.16	1.1
Haaskraal	1	1	7	0 14	0.14	4.0
Abbot's Cave	2	1	14	0.14	0.07	2.0

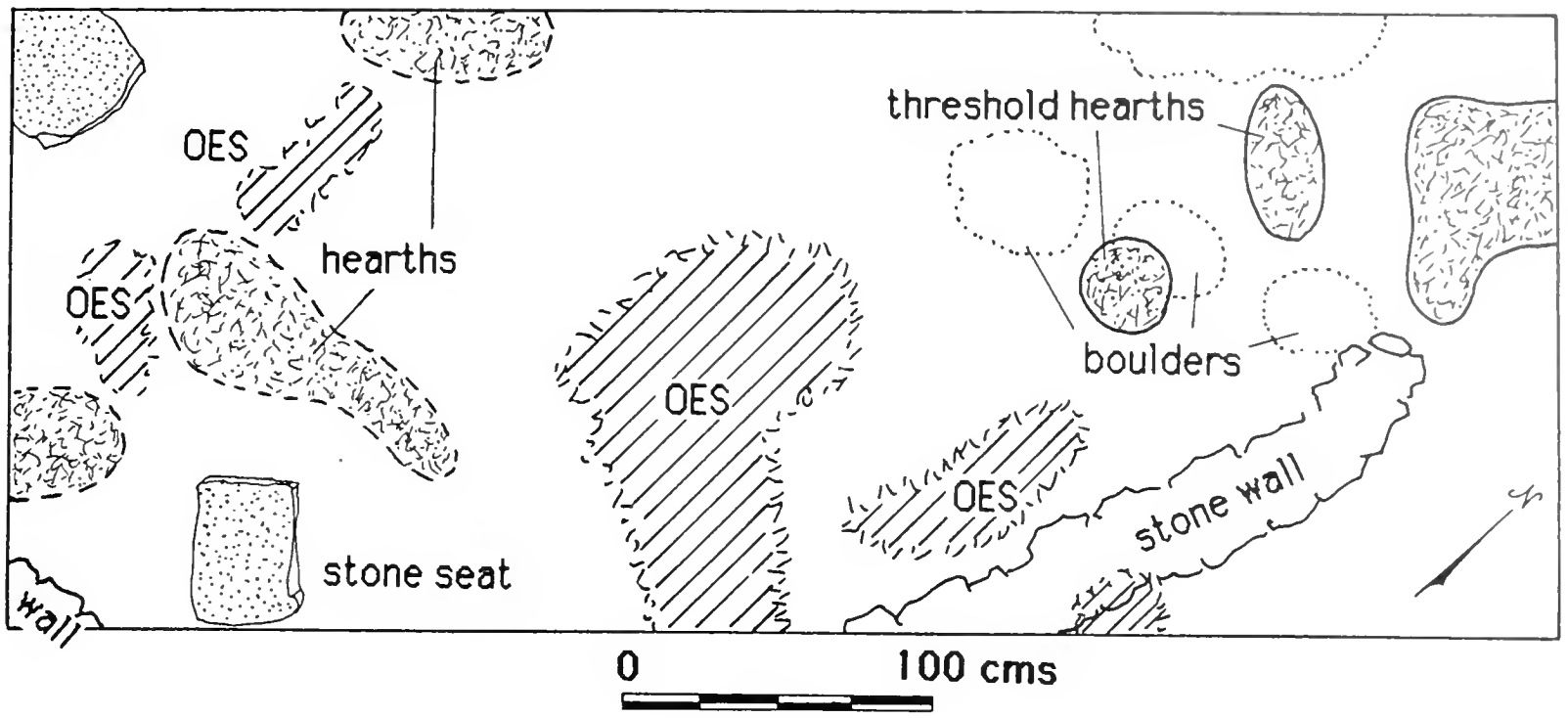


Fig. 2. Outline of the excavation in Leeuhoek Shelter, showing the main features within the post-Contact layer. Areas marked OES are ostrich eggshell dumps. The excavation edge intersects two of the stone seats.

hereabouts (Leyland 1866:90). On the floor inside this wall were three smooth, rectangular stone seats, each with an upright stone slab back rest, arranged between hearths (Fig. 2). The place would have been ideal for stationing armed field guards.

Driekoppen, in spite of the large area excavated, only yielded minor traces of imported ceramics. It is 1.1 km from the original farmstead, but does not overlook its ruins. The occupants had to climb down a steep talus to reach the farm, and climb back up 150 m on their return. A very exposed aspect that faces into the prevailing northwesterlies makes it a dusty and uncomfortable lodging. The shelter would have been useless for stockmen, and it was never used as a sheep enclosure.

Although full of European items and sheep remains, Abbot's Cave has a curious dearth of ceramics. It is 2 km from the ruins of the Droëfontein farmstead, which can be seen from the cave. Its mouth is inconspicuous and can be reached without any effort. It would have been invaluable for hangers-on camped near the farmstead, and it later served as a small kraal, becoming filled almost to the ceiling with compacted sheep dung.

The tiny Haaskraal shelter is equidistant (4 km) from three farmsteads and set back in an alcove of dolerite boulders. There is a large kraal and shepherd's hut nearby, suggesting that stockmen had little use for the shelter. It is likely that its stone wall originally about 1.5 m high, was built before their time.

The equally small Van Zyls Rus shelter is 2,5 km from the Droëfontein ruins and the same distance to a neighboring farmstead over more mountainous terrain. Although well protected from northwesterlies and easily reached up a low talus, it very small and has no view at all. Living space was further curtailed by a large fallen roof slab. Yet a dry-stone wall was built along the drip-line right to up the ceiling lip in places.

Clearly a simple distance-decay model (i.e distance between shelter and farmstead dictates ceramic intake) will not wholly explain the variable amounts of imported ceramics found in the shelters (Table 1). Other more complex factors involving the specific personal relationships between the farmer and his retainers and/or servants must be reflected here, perhaps beyond the reach of either archival or archaeological enquiry.

THE CERAMICS

Sherds from 16 British and three Oriental vessels, plus two clay tobacco pipes were recovered from the six rock shelters. The term British is used here to include comparable wares made in Scotland and Wales (Robacker & Robacker 1978:145-148). British wares in these shelters were identified by their motifs, good quality, and by their similarities to vessels recovered from archaeological sites in the U.S. and Canada. There are vessels with hand painted motif, banded and annular designs, transfer-printed patterns and undecorated vessels. Their paste and glaze attributes indicate a range of ironstones and whitewares from late in the second quarter to well into the third quarter of the 19th century. No pearlwares or older paste/glaze combinations (Noël Hume 1970:128-132) were present.

Hand painted whiteware

A single hand painted teabowl (handleless teacup) from Leeuhoek displays a quickly executed, small flower design very common in the 1840s and 1850s. The design is called "sprig" and consists of green leaves with pinkish flowers on black stems (Fig. 3a). The colours of the Leeuhoek specimen are similar to the reds and greens found on imported British wares of the 1840s and 1850s in the U.S. Undoubtedly part of this same teabowl

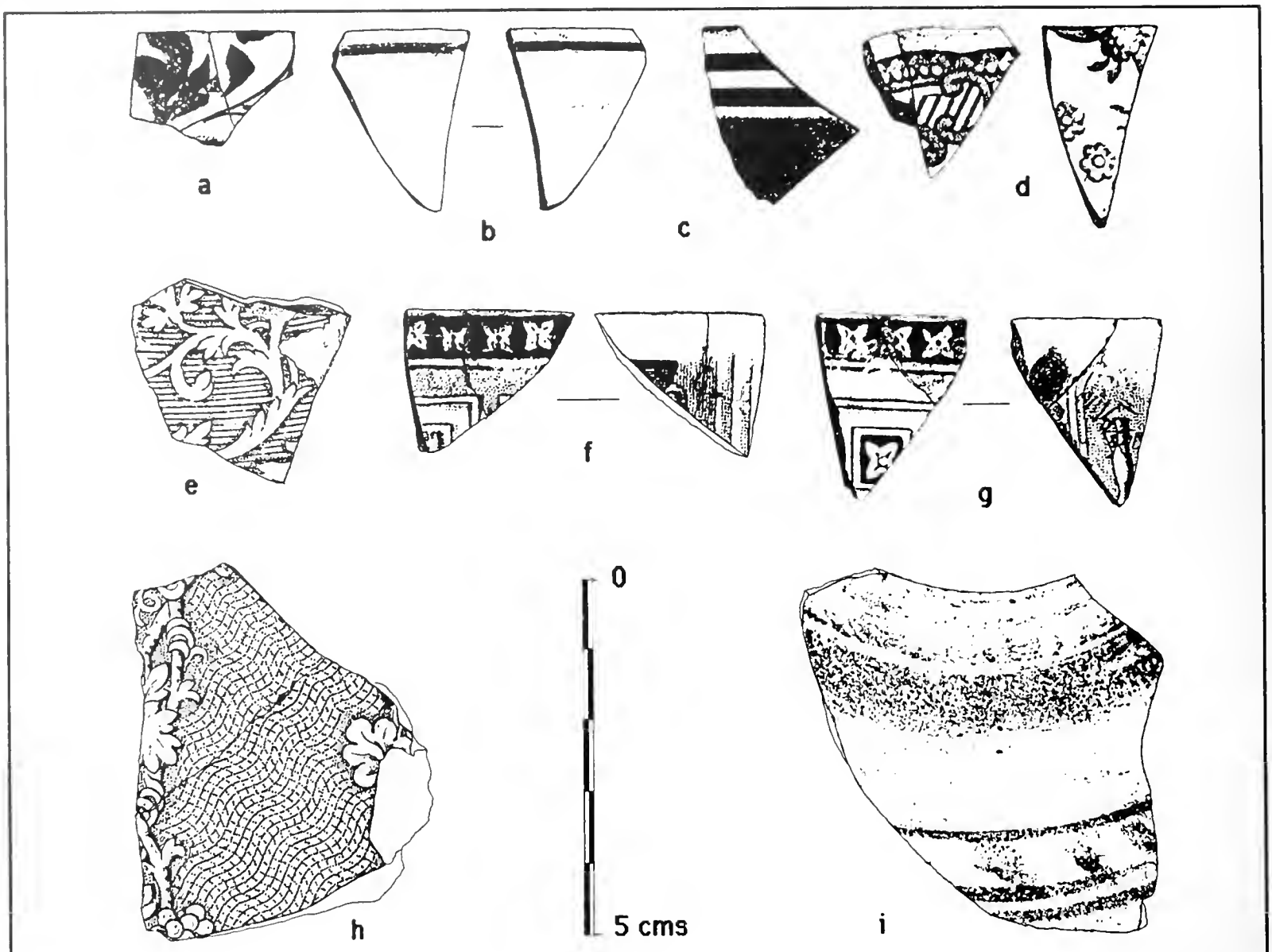


Fig. 3. Mid- to late- 19th century decorated sherds, all from Leeuhoek Shelter. (a) Body and (b) rim of hand-painted cup; (c) annular decorated cup rim 1840-1870, (d) rim and body of blue transfer-printed plate - 1834-1860, (e) grey-green transfer-printed soup plate - 1840-1860, (f & g) rim of purple-violet transfer-printed bowl- 1860-1880, (h) green transfer-printed dish or everted bowl - 1840-1870; (i) neck and shoulder of hand-painted Oriental ginger jar - pre-1890.

(Fig. 4a) are sherds displaying a 2 mm wide pinkish-red band just below the rim of the interior and exterior (Fig. 3b). Sprig-decorated vessels date to the second quarter of the 19th century (e.g. Lawrence 1974:160) and also to the third quarter (e.g. Godden 1965:318, fig. 57).

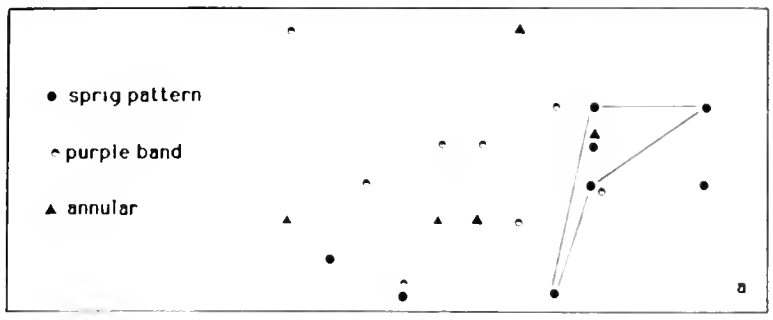
Annular wares

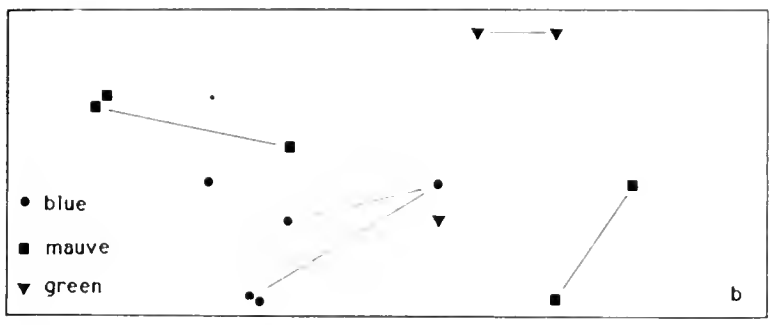
Annular wares are hollow-form (as opposed to flatware) vessels decorated with broad and/or narrow horizontal bands and washes of colour against a white or coloured ground (Noël Hume 1970:131). Again, only Leeuhoek yielded sherds of this type, but some have ironstone-type pastes while others have yellow ware pastes. None is engine-turned and all are from bowls or pitchers.

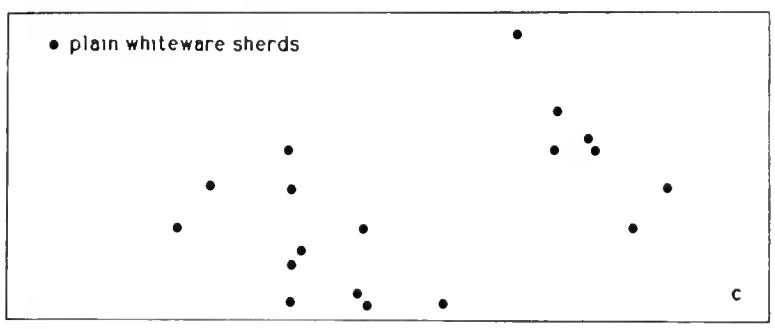
The first Leeuhoek vessel is an ironstone-type bowl with a broad wash of blue covering its exterior below two rim bands (Fig. 3c). The glaze exhibits a slight bluish cast (finely crazed) typical of mid-19th century ironstone-type wares. The two bands placed just below its rim are very dark brown and similar in colour to mocha-like designs that sometimes appear with annular motifs (Godden 1965:159, fig. 260). This vessel is typical of British wares produced for export between the 1840s and 1870s and is like many recovered from historical sites of this dating range in the U.S. (e.g. Price 1979:48-49; Fox 1983:139-141; Lees 1986:67; Perttula 1989:79) and also in Canada (e.g. Barka 1978:178; Lueger 1981:133-136).

The second annular vessel from Leeuhoek is represented by only two small body sherds containing thin brown banding over a whitish body and a broad surface wash of pale yellow to yellow (Munsell 2.5Y 7/4 to 7/6). It has an ironstone-like body and probably represents a bowl. Fine double bands about 1 mm wide match the Munsell 10YR 2/2 tile called very dark brown. This vessel is in the same horizon (Fig. 4a) and dates to the same period as the first vessel.

The third vessel is represented by two sherds with comparable decoration, i.e. dark brown, 2 mm wide bands on a whitish background, but it has a yellow ware type paste (Leibowitz 1985). Yellow ware vessels were exported from British potteries in the 19th century and later (Godden 1965:173; Leibowitz 1985:99-108). Although it was also produced in American potteries, it







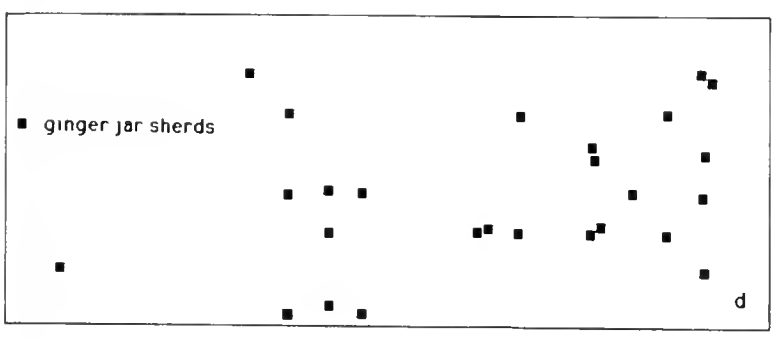


Fig. 4 Point-plots in plan view of sherds from different vessels found in the post-Contact layer of Leeuhoek rock shelter (see Fig. 2 for associated features). Lines signify refits. (a) distribution of the hand-painted cup overlaps with sherds from three annular vessels; (b) Minimal overlap between three transfer-print scatters - the fourth is from the talus; (c) whiteware sherds for two clusters, not matchable with any particular decorated vessel; (d) two ginger jars form separate clusters, tightly associated with the European vessels.

did not reach as many markets (*ibid*:110-113). The age of the Leeuhoek sherds falls in the middle range of yellow ware production: they are distinguishable from earlier 19th century examples (Inashima 1985:257) by their lack of relief in banding and simple colours. They can also be distinguished from later (post-1890) vessels by their relative fineness and their porous paste (Leibowitz 1985:107).

Transfer-printed wares

Transfer-printed sherds with seven different patterns were recovered on ironstone and whiteware pastes. All designs were under-the-glaze and the non-blue colours correspond with post-1830 varieties, not produced until such processes were perfected after 1828 (Hughes 1961:129). More defined dating is offered for each pattern when paste/glaze and motif characteristics are reviewed.

Leeuhoek Shelter yielded sherds with four different patterns (Fig. 4b). The first of these was found on five sherds that reveal portions of the very popular mid- to late-19th century blue pattern called "Asiatic Pheasant" (Fig. 3d). It was copied and produced by at least 31 firms in addition to the company that claimed to be its originator, namely Wedgewood & Co., formerly Podmore, Walker & Co., located at Tunstall in Staffordshire (Coysh & Henrywood 1990:28-29). Among the Leeuhoek sherds are three that conjoin to give a cross section of the rim and marly of a plate (Fig. 3d). They display a broad, wavy-edged rim with the transfer pattern set in from the edge about 2-3 mm leaving an undecorated white white band following the edge of the plate. Most of the transfer design itself is a medium powder blue, with outlines and other parts of the pattern appearing darker blue due to the depth of engraving on the master plate. Distinctive features of this example include the dark blue saw-tooth outermost edge of the pattern, the row of small white beads against a light blue shaded background, and the cross hatching chevron-like pattern within the area enclosed by scrolls. The closest match to this particular plate is from Coysh & Henrywood (1990:28), a plate manufactured by Podmore, Walker & Co. between 1834 and 1859 (Godden 1964:501). Other examples of this same motif are illustrated in Godden (1965:336) and Williams (1987:604-606) that date from the 1830 to the 1880s. The Leeuhoek example fits well with a late 1830s to 1850s production range because of its rim design, whiteware body and light blue colour.

The second Leeuhoek transfer-printed vessel is either a teacup or teabowl with a 70-80 mm diameter rim. It is printed with a distinctive dark purplish-to-violet blue that contains very widely spaced stippling across large parts of the pattern (Figs 3f & g). The upper section of the interior side of the rim has a single row of four-petal flower heads set within a broader band of purplish-blue. The band exhibits some reddish-violet highlighting that could represent traces of luster (Godden 1965:214-215) or simply overglaze highlighting to the rim area (possibly copper or silver luster). The exterior does not have this border motif; instead there is a heavily stippled background against which open designs of antique amphorae are set. Both interior and exterior motifs are reminiscent of classical revival designs dating to the third quarter of the 19th century. The poor quality of the engraving also points closer to the 1860s and 1870s, but more precise dating is not possible.

The third Leeuhoek vessel is a bowl or dish with a broad, slightly everted rim covered with an olive green transfer-printed motif. The design consists of vines, leaves and grapes set against a stippled background along the outer 20-30 mm of the rim, followed by a wavy lattice- or net-like pattern of finely stippled lines ending with an inner pattern of leaves, etc. (Fig. 3h). The heavy

use of stippling and lines to form background patterns, as well as the use of undecorated white areas to form the floral and vine motifs is common to patterns dating to the 1840s, 1850s and 1860s. A similar example containing grapes, vines but more leaves set between a darker lattice-like background (Godden 1965:336, fig. 598) is attributed to the 1841-1860 range. Another less closely comparable, but nonetheless similar pattern (*ibid*:fig. 528) dates to between 1839-1858, and was manufactured in Wales (*op. cit.*:297; Godden 1964:587). Given the style of the pattern and its whiteware body, a production date for the Leeuhoek vessel between late in the second quarter and midway through the third quarter of the 19th century seems most likely. Although Lofstrom *et al.* (1982:14) suggest that the popularity of green patterns ended at mid-century, this type of motif could extend into the 1860s.

The last Leeuhoek transfer-printed vessel is an ironstone soup plate about 220 mm in diameter and exhibiting a recessed footrim (e.g. Copeland 1980:173) about 120 mm in diameter. This specimen is particularly interesting since it cross matches to a sherd found on the ash heap of Leeuhoek farmstead (S. Hall, personal communication). The plate has a greyish-green transfer-print with a background of evenly spaced concentric lines over which a more stylized vine-like motif loops and interlocks (Fig. 3e). The white areas forming the stylized vines and leaves are enhanced by adjacent fine stippled shading. Two of the seven sherds recovered are rim edges and indicate that the vine motif does not form a continuous border along the outermost edge of the plate. Similar rim and marly motifs occur on a molded ironstone-type plate owned by the senior author and manufactured by Podmore, Walker & Co. This particular plate style dates to the late 1840s and 1850s. Its manufacturer changed its name in 1859 indicating that this example was produced before that date (Godden 1964:501). Two other examples shown in Hanson and Hsu (1971, figs 4 & 12) also date to the 1840s, 1850s and early 1860s, based on their molded form and specific manufacturers' dates.

An extremely small transfer-printed sherd from a 4,5 mm thick vessel was also recovered from Driekoppen. This specimen is unique in that it is the only one recovered from a deeper stratigraphic context with glass trade beads that suggests a pre-1840 date (Saitowitz & Sampson 1992). Although too small for positive identification, it exhibits a blue transfer-printed motif of flower heads on its interior surface that falls within Copeland's (1982:78-79) colour range termed "Arabian". This corresponds to Munsell 5PB 3/8.

Sherds from two other transfer-printed vessels were recovered from Volstruisfontein. Two sherds from the outer edge of a ceramic lid to a teapot or bowl show heavy wear extending through the glaze along prominent points. This container was extensively used before it was broken and discarded. The motif on its exterior is a floral pattern of small, four-petalled flowers against a blue background that opens up with greater undecorated space away from the rim. The ivory paste/glaze cast and body density suggests that this is not a true ironstone. They could date within an 1840-1885 range if British, or slightly more recent if not. That they are neither ironstone nor whiteware underscores a post-1850 date. Similar examples (i.e. ivory paste/glaze vessels) in the U.S. seem to fit more readily into an 1855-1870 range, but are not very common.

The second Volstruisfontein sherd came from a few centimeters above the lid fragments. This is part of a refined ironstone or whiteware vessel with a purple transfer-printed design. Unfortunately, the sherd is now missing from the collections and could not be examined by the authors. Similar examples are reported as common in post-1860 contexts in the Cape Town area (Hart 1989:187; 1991 personal communication).

Undecorated ironstones and whitewares

Leeuhoek also produced numerous plain and light bluish-tinted ironstones and whitewares as well as several burned and stained sherds from the same horizon and area as the forgoing vessels (Fig. 4c). The interior of two footring sherds have a purplish-blue cast to their puddled glaze, indicating an 1840s-1860s dating range (Price 1979:141; Moir 1987:102). One footring belongs to a bowl but the form of the other cannot be determined. A third unidentifiable fragment is from the rim of a saucer, ca 130 mm diameter and partly burned. Given their contexts, it is likely that some of these sherds are from undecorated portions of the transfer-printed or hand-painted vessels already described.

Another undecorated refined earthenware sherd came from Volstruisfontein. This is from a bowl with a footring diameter of 110 mm, heavily worn and chipped. Based on its paste and glaze, this also post-dates 1840.

Soft paste porcelain

A single sherd of soft paste porcelain, commonly termed bone china, was recovered from Driekoppen. This basal sherd is from a waisted teabowl or teacup with a well rounded footring and constricted lower base typical of teacups dating to between 1830-1860. An example of a similar waisted teacup (Godden 1965:164, fig. 275) dates to 1844-1855. Soft paste porcelain teacups and teabowl are encountered in very low frequencies in historic sites dating to the 1830s to the 1850s in the U.S. (e.g. Inashima 1986:261-262), but are often misclassified as whiteware or ironstone.

Stoneware

Only Volstruisfontein produced one small fragment of the curved side of a stoneware jug or ginger beer bottle typical of those found in the environs of Cape Town (Lastovica & Lastovica 1982:29). It is 7 mm thick, with a light brown external glaze, typical of many types manufactured in the 19th century.

Oriental ginger jars

The Leeuhoek assemblage contains fragments of two Oriental porcelain vessels, commonly termed ginger jars (Fig. 4d). These squat, globular containers were used not

only for ginger preserves, but also for a wide variety of spiced and salted foodstuffs. They are notoriously difficult to date for want of adequate documentation at source, and because conservative production techniques apparently changed hardly at all over several decades. Identification and dating of specimens from archaeological sites in the west are also deficient. They are, however, commonly found in western Canada in levels dating to the last two decades of the 19th century (e.g. Lueger 1981:149), and whole specimens from late-19th/early-20th century contexts were found in Tucson Arizona (Lister & Lister 1989:1-17). However, exact matches with those described below cannot be found among published examples.

The first Leeuhoek jar has a rounded shoulder, a short vertical neck with a flattened rim, and an internal mouth diameter 62 mm. The neck exterior is devoid of glaze, with no trace of wear or chipping, so the missing glaze cannot be the result of frequent lid removal, as seen in snuff jars at the Cape for this period (Woodward 1974:105). There is a narrow, shallow trough at outer neck/shoulder junction which retains a glaze strip, then an unglazed 8 mm wide band occurs on upper shoulder, probably to allow sealant to adhere to the fabric. On the body sherds faint, smooth undulations can be felt on the interior. The belly sherds are much thinner than the shoulder, but base fragments are missing. A clear transparent glaze with very minor flaws lends the surface a glossy appearance with a pebbly texture. The crystalline crazing typical of this ware is absent except on one sherd that has been burned in a fire after breakage, to produce a grey, wide-spaced craze. The underglaze is very pale grey with a bluish tinge. Decoration on the largest shoulder fragment (Fig. 3i) comprises grey-blue brush lines parallel to the jar's circumference, single at the top and double below with diagonal brush strokes spaced at regular 8 mm intervals between the parallel lines. At the base of each diagonal a second, thinner brush stroke is overlaid at a more oblique angle and half as long as the underlying diagonal. Nine small body sherds have the same pattern, but there are two other small sherds with darker green-grey patches of colour where initial brush strokes were made. There is a fleck of paint on the glazed lip.

The second Leeuhoek jar is also globular with a rounded, partially unglazed shoulder and a short, vertical neck with flattened rim. The internal mouth diameter of this specimen is only ca 48 mm. The neck exterior is glazed, and there is a narrow, shallow glazed trough at the outer neck/shoulder junction. The unglazed band is 10 mm wide on the upper shoulder, and there is a shallow asymmetric trough in this band. On the body, there are numerous ridges on the interior, suggesting rapid throwing. One small body sherd has an internal surface angle suggesting a shoulder junction, in which case the lower body is much thinner than the shoulder. This is turn suggests that the vessel was made in two parts (e.g. Lister & Lister 1989:43). The glaze is clear, transparent, but less glossy than the other jar. There are small flaws in the underglaze, which is light buff. No decorations occur on the largest shoulder fragment, but one thick sherd possibly from near the shoulder has two grey-green brush lines parallel to the jar circumference. Thin, incomplete diagonal brush strokes are spaced at ca 15 mm intervals between parallels. Other thinner sherds have intersecting brush strokes suggesting free-form rather than a repeated pattern. Four thin, flatter sherds, possibly basal pieces, cannot be attributed with confidence to this vessel, but overlap completely with its horizontal distribution (Fig. 4d).

Abbot's Cave also yielded a small fragment of oriental stoneware vessel with a blue underglaze of greyish tinge; there are three brush strokes of grey blue. Another fragment of coarse oriental stoneware was found deeper in the same area of deposit and almost certainly belongs to the same vessel. It, too, has a blue underglaze with a greyish tinge and there is single brush stroke of grey green. There are wheelmarks on interior, similar to those found on some Leeuhoek sherds.

Clay tobacco pipes

A single kaolin clay pipe bowl fragment was recovered from Van Zyls Rus Shelter. Only the junction of the stem and bowl has survived, and this is too fragmentary for accurate dating. Although they were becoming scarce by the mid-19th century, this does not preclude a later date. In Canada and the U.S. they were seldom imported after 1890.

Another undiagnostic pipe bowl fragment of thin white clay came from the humic matter among the outer stones of the wall built at the drip line of Haaskraal shelter (Hart 1989:185). The fragment retains only part of a slightly bevelled lip, but no heel or stem. Consequently the bore diameter is unknown, and dating remains uncertain.

DISCUSSION

The central question must now be addressed: why are the first ceramics to appear in the upper Seacow valley rock shelters datable only to 1840 and later when there is ample documentation for European goods flowing into Sun èi hands long before that time? The first and most obvious correlation is between this event and the founding of Richmond and Middelburg villages. This equation suggests a parsimonious model in which the advent of stores on either rim of the upper valley during that decade would greatly boost the amount of ceramics flowing into local farmhouses. This flow would in due course spill over to farm staff along the usual pathways of damaged discards or worn hand-me-downs. New specimens could be passed on as wages, gifts, or direct purchase by servants who were cash-based wage earners. Prior to the decade 1840-1850 the volume of ceramics reaching farmhouses, via travellers or wagon trips, would have been so small that pieces were not yet reaching the floors of the shelters used by the farmer's retainers or staff.

At least, ceramics were not reaching the shelters in sherd numbers large enough to permit accurate identification and dating. Given that the pre-Contact record contains ample evidence that the ancestral Sun èi

collected fossils, coloured pebbles, petrified wood fragments, and rock crystals, it is unlikely that they would have ignored bits of decorated ceramics found lying about the farm werf. While isolated sherds may appear in low numbers in pre-1840 levels, the only specimen that may fit this category is the Arabian blue transfer-print crumb from Driekoppen. This was recovered at the same depth as the earliest (purported pre-1840) glass bead sub-assemblage.

This trickle-down model has yet to be tested by systematic excavation of the ceramic-bearing ash heaps at many farmhouse ruins. Documented sources are both scarce and ambivalent in their support for this scenario. For example, a clay pipe was given to to a Sun èi man by the Field Corporal of a commando as early as 1775 (Moodie 1960:44). That two trained observers who independently set down details of upper valley farmhouse interiors in the 1820s (Burchell 1824: 81-82; Thompson 1827: 47-48) both failed to mention ceramics may be coincidental. Likewise, the inventory of possessions found in the wagon of a murdered stockfarmer in the Sneeuberg (South African State Archives 1821:214) mentions a teapot and a plate, but does not specify whether they were ceramic or metal, like the rest of his containers. There is also a blanket category of purchases (kopen) that could include crockery items. In this context it is also noteworthy that in 1830 a migrant stockfarmer's' wife, mistaking Steedman for a travelling smous, asked him for black cloth but made no enquiries about crockery (Steedman 1835: 146), implying that there was no great need for it. It may again be coincidence that the first direct references to ceramics in farmhouses both occur in the 1840s. Thus we have the hunter Cumming in 1843 leaving his host "some crockery to which his frou had taken a fancy" (1850:94), and the excitable young farmer Orpen in 1848 mishandling the "tea things" (1908: 26-27) from whom "...Mrs. Dixon had to take the tea pot.... for I had flooded both sugar bowl and tray." However, he also notes that when his elderly Dutch neighbour took coffee "... this he always drank out of a bowl, not a cup" (Orpen 1908:9), implying that the custom was an old one.

CONCLUSIONS

The same range of mid-19th century imported ceramics, mainly British earthenwares, that were introduced into upper Karoo farmsteads (e.g Mills 1992:51, fig.14) were also finding their way into the superficial deposits of neighboring rock shelters. These sites also provide tight chronological contexts for less common specimens of Oriental ginger jars, which have been hitherto been difficult to date. Given the contexts of these fragments, they are likely to have been brought there by Sun èi (Bushman) servants and/or retainers of the farmers, particularly by shepherds and field staff. This interpretation is strengthened by cross-matching sherds from Leeuhoek shelter and the nearby farmstead ash heap.

Prior to 1840 almost no omported pottery made its way into the shelter fills, although most farmsteads supported groups of Sun èi retainers for large parts of each year with food, tobacco and gifts. Only Driekoppen yielded a solitary crumb of transfer-print that could date to this earlier period. Evidently glass trade beads were the most common form of gift being handed out.

The volume of ceramics available to whole farmstead communities increased rapidly with the advent of village stores on the rim of the upper Seacow valley in 1844 and 1852. At the same time, output and export from the British potteries was increasing rapidly so that these new stores would have been relatively well stocked. Both changes are distantly reflected in the sudden appearance of earthenwares at local rock shelters.

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THE MACROFAUNAL AND MOLLUSCAN REMAINS FROM TLOUTLE, A LATER STONE AGE SITE IN LESOTHO*

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ABSTRACT

The macrofaunal and molluscan samples from Tloutle in Lesotho have been examined. The molluscan fauna shows that these animals may be held responsible for some bioturbation resulting from their burrowing habits. The macrofaunal remains provide evidence for possible low primary production during the late Pleistocene/early Holocene period. The presence of a roan or blue antelope supports previous findings that these animals originally had a wider distribution than was originally thought. Isolated human finger digits seem to idicate some form of ritual or healing behaviour amongst the hunter-gatherer population.

INTRODUCTION

Tloutle Rock Shelter is situated in western Lesotho and was excavated by P. Mitchell during 1988-1989 (Mitchell 1990). Two areas within the dripline were excavated and are referred to as the interior and exterior excavations due to their relationship to the back wall. The exterior excavation was the larger of the two and provided most of the material. The stratigraphy is complex and some disturbance, the result of recent Basutho occupation, occurs in the interior excavation.

The faunal remains have been analysed per excavated unit, but for the purpose of this paper units have been combined as suggested by the excavator. The following layers, from the surface downwards, are recognised in the exterior excavation: SS, BGL, WC, CCL, CSL-UP, CSL-LR, GS, BS and BC. The units of the interior excavation appear to represent a single period of occupation.

Dates available for the exterior excavation (Mitchell 1990) are:

6140 ± 100 BP (Pta-5158) at base of CCL
6910 ± 80 BP (Pta-5162) at base of CSL-UP
7230 ± 80 BP (Pta-5171) at base of CSL-LR
8680 ± 80 BP (Pta-5172) in middle of GS

The artefact assemblages from CCL and CSL-UP are Classic Wilton, CSL-LR Early Wilton and GS Late Oakhurst. The undated lowest units BS and BC contain an industry that shows similarities with that of the Robberg and probably relate to the late Pleistocene and/or early Holocene period (Mitchell 1990).

The interior excavation appears to be much younger than the exterior excavation (Mitchell personal communication). It has not been dated, but may be younger than 2000 BP.

RESULTS

The macrofaunal samples consist of 175 042 fragments from the exterior excavation and only 3 164 fragments from the interior excavation (Table 1). The samples are very fragmentary and only 3% of all fragments were identifiable to species or animal size class. The species identified from both excavations are listed in Tables 2 and 3.

Notes on some species represented

Isolated human remains were found in the exterior excavation. They consist of a 2nd and 3rd digit of the 5th finger of an adult (CCL E8/030 and 077) and a 3rd digit of the 3rd finger of an adult (CSL-UP E7/114).

Remains of domestic animals, cattle, goat and sheep or goat, occur in both excavations. They occur as deep as the Wilton layers (CCL and CSL-UP) in the exterior excavation and are also found deep into the interior excavation. The remains from these layers are relatively fresh and the fragments are also larger compared to most of the other faunal remains from those layers, suggesting that they are intrusive.

Hippotragus equinus/leucophaeus, roan or bluebuck, is represented by one incomplete lower M3 from GS. Due to its condition identification to species was not possible.

Hyrax remains were common in all the samples from both the exterior and interior excavations. Although many relate to the layers in which they were found, judged on

Table 1. Tloutle Shelter: total faunal sample.

	Exterior excavation										Interior excavation
Skeletal parts	SS	BGL	WC	CCL	CSL-UP	CSL-LR	GS	BS	BC	EXT.TOT	INT.TOT
Bovid remain	43	98	13	59	430	169	227	11	2	1586	206
Other remains	37	583	114	1261	487	710	322	46	3	3563	41
TOTAL IDENTIFIABLE	80	681	127	1854	917	879	549	57	5	5149	247
TOTAL UNIDENTIFIABLE	5713	7423	606	67502	30346	20792	35112	2001	398	169893	2917
TOTAL SAMPLE	5793	8104	733	69356	31263	21671	35661	2058	403	175042	3164
Mass identifiable g	80,3	265,6	60,2	934,1	1507,6	730,8	649,9	22,7	64,1	4315,3	1627,0
Mass unidentifiable g	548,7	2058,7	172,2	12678,9	7337,0	12091,6	4680,8	253,5	95,1	39916,5	3731,0
TOTAL MASS	629,0	2324,3	232,4	13613,0	8844,6	12822,4	5330,7	276,2	159,2	44231,8	5358,0
% burnt	15,3	53,1	41,4	85,1	75,0	38,7	33,2	6,1	7,7	62,0	22,4
% identifiable	0,1	8,4	17,3	2,7	2,9	4,1	1,5	2,8	1,2	2,9	7,8

fragmentation and appearance, many of the dassie remains from the exterior excavation are relatively fresh. All the ground squirrel remains are also from the exterior excavation and all are relatively fresh.

Ostrich eggshell fragments are present in most southern African Holocene deposits and were also present in the Tloutle samples (Mitchell 1990). Although, ostrich skeletal remains are seldom found, the Tloutle sample yielded two phalanges, one each from CSL-UP and CSL-LR.

Frog/toad remains occur in five layers, mostly in CCL. The size of the fragments suggests that they were part of owl pellets and do not relate to the archaeological deposits. Most of the small fish, lizard and small rodent remains also appear to come from owl pellets.

Fragments of shells of the terrestrial gastropod *Achatina* sp. occur in all layers of the exterior excavation with the exception of BC. *Achatina* shells loose their colour markings and sheen relatively soon after the death of the animal. Of the Tloutle sample, 33% of the *Achatina* fragments seem to relate to the layers they were found, but 67% of the fragments still display sheen and colour markings, indicating that they are of recent origin, notwithstanding the fact that such specimens occur through the deposit including the Oakhurst units. Similar observations have also been made at other sites (Plug 1990a).

Other terrestrial molluscs all appear to have been self-introduced. The freshwater mussels were brought into the shelter.

Ages of animals at time of death

Tooth eruption, tooth wear and epihyseal fusion were used to determine age classes of the mammalian fauna using the categories discussed in Plug (1988). There were no foetal remains and only one fragment of a neonate large bovid individual. There were nine juvenile individuals represented, seven sub-adults, 85 adults, 15 mature and ten aged.

Sex determination

Few bones were complete enough to allow sex determination. A male and female baboon were identified on the canine teeth. Pelvic fragments represent a small bovid male, a male and female bovid of medium size and a large bovid male. A male francolin was identified by its tarso-metatarsus with spur.

Skeletal parts representation

The faunal samples from most of the different layers are too small to establish patterns in skeletal parts representation. Table 4 represents the skeletal parts of CCL, the layer with the largest number of identifiable bone fragments. Skull fragments, which include teeth, are the most numerous, followed by lower limb bone fragments. This pattern reflects bone density and the resistance of denser bone to attrition, rather than human selection. The representation of vertebrate skeletal elements at Tloutle follows a similar pattern to that of sites such as Sk 4, Pr 34 (Plug 1988) and Mhlwazini (Plug 1990).

Taphonomy of the samples

The Tloutle samples are heavily fragmented. Fragmentation of bone is common in almost all archaeological faunal samples and is often related to human action during butchering and meat processing. In cave sites marrow extraction, trampling, and pressure caused by the weight of overlying deposits usually cause most of the fragmentation (Plug 1988; Brink 1987). Where much of the sample is burnt fragmentation also increases as burnt bone is more fragile (Plug 1990b, Plug and Roodt 1990). Burnt bone occurs in both the interior and exterior excavation and constitutes 34,6% and 22,4% respectively of the faunal samples. However, the faunal samples from Tloutle are more fragmented than those of other cave deposits that I have examined such as Rose Cottage, Bushman Rock Shelter (where over 70% of all fragments were burnt), Sk 4 and Pr 34. It does appear as if Tloutle was very intensively used.

The low percentage of identifiable fragments can be attributed to the fragmentary nature of the samples. The 17,3% in WC appears high, but most of the specimens are intrusive (terrestrial snails).

Carnivore gnawing is visible on seven bone fragments and an additional 20 fragments appear to have been

Table 2. Tloutle Shelter: species present in exterior excavation, NISP/MNI.

Species	PROVENANCE SS	BGL	WC	CCL	CSL-UP	CSL-LR	GS	BS	BC
Insectivora gen. et sp. indet.			1/1				2/1		
Homo sapiens sapiens				2/1	1/1				
Papio ursinus		1/1		13/2	10/2	4/1	7/2		
Canis mesomelas	1/1			2/1					
Canis sp.	1/*			1/*	2/2		3/1		
cf. Atilax paludinosus							2/1		
Viverridae gen. et sp. indet.	2/1	2/1		3/1	4/1	2/1	3/1	1/1	
Panthera pardus				2/1					
Felidae sp. indet.							1/1		
Carnivora gen. et sp. indet.		1/1		1/*	1/*		1/*		
Equus burchelli		4/2			2/1	1/1		1/1	2/1
Procavia capensis	4/1	8/2	17/2	110/12	63/5	131/10	98/10	24/3	
Phacochoerus aethiopicus		4/1		5/1	2/1		2/1		
Suidae gen. et sp. indet.		2/*		3/*	1/1				
Bos primigenius f. "taurus" Bojanus	1/1	14/4		1/1	1/1				
Ovis/Capra	6/2	6/2		2/1					
Connochaetes gnou		1/1		3/1	1/1	2/1			
Alcelaphus buselaphus				2/1	6/1		1/1		
Connochaetes/Alcelaphus	5/2	1/1	1/1	4/*	19/1	2/1			
Damaliscus dorcas	1/1			2/1	42/5				1/1
Sylvicapra grimmia					2/2				
Sylvicapra/Ourebia							1/1		
Antidorcas marsupialis	1/1			10/1	10/3	3/1	3/1		
Oreotragus oreotragus	4/1	6/1	3/1	66/5	15/3	17/2	31/2		1/1
Raphicerus campestris	2/1	3/1		7/2	11/2		4/1		
Raphicerus sp.				1/*	6/*	1/1	3/1		
Oreotragus/Raphicerus		2/1		3/1					
Pelea capreolus		3/1		8/2	1/1		1/1		
Hippotragus equinus/leucophaeus							1/1		
Taurotragus oryx	3/2	3/1	1/1	20/2	8/2	1/1	27/3		
Redunca cf. arundinum				3/1	2/1				
Redunca fulvorufula		1/1		3/1	3/1		1/1	1/1	
Pelea/Redunca				2/*	1/*		1/*		
Bovidae small (Bov. I)	4/*	22/1	6/1	208/2	61/1	51/2	72/*	3/1	
Bovidae medium (Bov. II)	8/1	30/1	2/1	179/5	141/1	50/2	65/2	5/1	1/1
Bovidae medium large (Bov. III)	8/*	6/*		67/1	99/1	42/1	25/4	2/1	
Bovidae large (Bov. IV)				2/*	1/*				
Xerus inauris	1/1				1/1	1/1			
Pedetes capensis					1/1				
Hystrix africaeaustralis	4/1			1/1	1/1	2/1	4/1	1/1	
Otomys cf. irroratus				6/2	5/1	2/1	3/1		
Otomys sp.	1/1	2/1		2/*	3/1	1/*	2/1	1/1	
Rodentia gen. et sp. indet.		3/*		17/4	5/1	7/1	12/1	4/1	
Lepus sp.				1/1					
Lepus/Pronolagus	1/1			17/2	12/2	8/1	10/1	1/1	
Struthio camelus	1/1			1/1	2/1	12/1			
cf. Saggitarius serpentarius						1/1			
Coturnix sp.				1/1		1/1			
Francolinus sp.				5/2					
Numida meleagris				75/1	1/1				
Aves gen. et sp. indet.				2/1					
Varanus sp.					1/1				
Reptilia: lizard	1/1				1/1	1/1	1/1	3/1	
Reptilia: tortoise				2/1			1/1		
Pyxicephalus adspersus				1/1					
Amphibia: frog/toad			1/1	16/5	1/1	9/2	4/1	7/2	
Pisces gen. et sp. indet.				17/3	3/2				
Trachycystis sp.	2/2	13/13	22/18	9/8				1/1	
Achatina sp.	24/5	509/23	71/3	905/24	136/24	178/6	149/3	2/1	
Gastropoda: terrestrial		1/1	1/1			2/2	3/1		
Unio caffer		1/1		1/1	167/7	283/12	5/1		
Unionidae	1/1	25/3	1/1	40/3	63/2	61/2	7/1		
Gastropoda: fresh water						1/1			
Succinea cf. striata						2/2	2/2		
TOTAL	80/25	681/70	127/32	1854/109	917/69	879/60	549/53	57/18	5/4

Table 3. Tloutle Shelter: species present in the interior excavation, NISP/MNI.

Species	
Papio ursinus	3/1
Canis mesomelas	2/1
Viverridae gen. et sp. indet.	1/1
Panthera pardus	1/1
Felis lybica/catus	1/1
Carnivora gen. et sp. indet.	1/*
Equus burchelli	5/1
Procavia capensis	24/3
Bos primigenius f. "taurus" Bojanus	27/3
Capra hircus	1/1
Ovis/Capra	6/2
Connochaetes gnou	1/1
Alcelaphus buselaphus	1/1
Connochaetes/Alcelaphus	13/2
Damaliscus dorcas	1/1
Sylvicapra grimmia	2/1
Antidorcas marsupialis	3/2
Oreotragus oreotragus	1/1
Raphicerus campestris	3/1
Raphicerus/Oreotragus	1/*
Taurotragus oryx	38/3
Redunca arundinum	2/1
Redunca fulvorufula	2/1
Redunca sp.	2/1
Bovidae small (Bov. I)	8/1
Bovidae medium (Bov. II indet.)	18/1
Bovidae medium (Bov. II non domestic)	18/1
Bovidae large (Bov. III indet.)	20/*
Bovidae large (Bov. III non domestic)	38/3
Hystrix africaeaustralis	2/1
Lepus/Pronolagus	1/1
TOTAL	247/39

corroded due to carnivore stomach acids. Only one bone fragment, an os malleolare has pathological damage in the form of exostosis, probably the result of trauma.

Damage caused by human action is scarce. One humerus shaft fragment has percussion damage. Such damage would occur if bones are split to obtain marrow. An upper canine of a jackal (unit E9-051) has a hole drilled through the root and could have been used as a pendant. The broken end of a bovid metatarsus has been polished to a smooth point. An almost complete ground or polished bone point was found in BGL, five ground point fragments and one ground point/linkshaft fragment in the interior excavation and two ground point or linkshaft fragments in unit C9-134 CSL-UP. All these objects have circular sections. A worked bone fragment was also present in BGL.

DISCUSSION

There is evidence that there was some bioturbation in the deposits. This was particularly true for the interior excavation where recent human activities appear to have been largely responsible. Intrusive material in the exterior excavation includes the remains of cattle, sheep and goat, hyrax, ground squirrel and molluscs. Both ground squirrels and landsnails are burrowers and it is

Table 4. Tloutle Shelter: mammal skeletal parts preservation in CCL. (P: primate, C: carnivore, H: hyrax, S: suid, B: bovid, RH: rodent and hare).

Skeletal part	P	C	H	S	B	RH	TOTAL	%
Cranial	6	3	41		83	22	155	20,0
Vertebra					3		3	0,4
Scapula	1		2		3		6	0,8
Humerus		1	20		18	1	40	5,1
Radius	1	1	11	1	22	1	37	4,6
Ulna			5		8	1	14	1,8
Pelvis			1		8	4	13	1,7
Femur			7		16	3	26	3,3
Tibia/Fibula			5		14	3	22	2,8
Metacarpus			2		12		14	1,8
Metatarsus			3		36		39	5,0
Metapodium		1	1		48	4	54	6,9
Patella					1	1	2	0,2
Ossa capri	3		1		25		30	3,9
Ossa tarsi			7		34	2	43	5,5
Os malleolare					2		2	0,2
Sesamoid					45		45	5,9
Phalanx 1		2		3	119	1	125	16,1
Phalanx 2	2		1	2	74		79	10,2
Phalanx 3	1	1	1		21		24	3,1
Phalanx indent.	1		2	1		1	5	0,6
TOTAL	15	9	110	8	592	44	778	

likely that some of the intrusive material was introduced through the activity of these animals. There is no evidence that humans were the cause of the bioturbation in the exterior excavation. It appears that these disturbances had little influence on the integrity of the artefact assemblages, nor did they compromise the stratigraphic consistency of the C14 dates.

The faunal samples indicate that the area was well stocked with game during the Holocene. The wide variety of species represented, suggests that the occupants made extensive use of the resources available. Historical records show that most of the species identified occurred in the area and that species such as springbok, eland, wildebeest and hartebeest, were fairly common in the western parts of Lesotho (Arbousset and Doumas 1968).

The *Hippotragus equinus/leucophaeus* remains are of interest. Until recently it was assumed that *Hippotragus* spp. did not occur in the eastern Orange Free State and Lesotho areas (Du Plessis 1969, Smithers 1983). Cumming (1850) observed these antelopes as far south as Griqualand West. Remains of the extinct bluebuck and of a possible roan have been identified from Rose Cottage Cave in the Oakhurst/Robberg and Wilton layers respectively (Plug and Engela 1992). The Tloutle specimen dates to the early Holocene ca 8600 BP, and is therefore roughly contemporaneous with the Rose Cottage specimens, substantiating the suggestion that these animals had a wider distribution in the past than was originally thought. Their representation in the rock art of the eastern Orange Free State (Loubser *et al.* 1990) and descriptions in the journal of Lieut. W.J. St. John (Colahan 1990) further suggest that they could have persisted in the area until recent times.

The people who used the shelter were skilled hunters, specialsing in the hunting of many different animal species. Although they hunted antelope of all sizes, the remains of small and medium antelopes are particularly

common in the samples. The disparity between the number of skeletal remains of small and medium bovids on the one hand and large antelopes on the other is not necessarily due to human selection or butchering practices, but may also reflect relative availability of animals in the area. Most of the animals were adult, indicative of selective hunting (Plug 1988).

There is a remarkable reduction in faunal remains in the undated layers BS and BC. This may be the result of poor preservation, but could also indicate less favourable conditions. If these layers predate 14 000 years BP, it would reflect the colder conditions that are associated with the last glacial period, which reached its peak at ca 18 000 years BP. Colder, less amenable conditions may have resulted in low primary production and less frequent human occupation. Similar trends were observed at Rose Cottage Cave (Plug and Engela 1990).

The bone samples show that carnivores also used the shelter from time to time. Carnivores such as leopard could have been responsible for some of the hyrax remains.

Most of the carnivore remains appear to relate to the archaeological deposits. Although they could have been hunted for their skins or food, they could also have had ritual importance. The drilled jackal tooth could have had shamanistic and/or *hxaro* gift value as could some of the mongoose remains (Bleek 1935, 1936; Korsman 1990).

The isolated human digits are interesting as no traces of a grave were found. Finger amputations have been recorded amongst the southern Bushmen and Khoi (Bleek and Lloyd 1911, Schapera 1930). Isolated finger remains have also been recorded from the Honingklip Holocene deposits (Korsman 1990). It is possible that the finger digits of Tloutle were amputated. There are no cut marks visible on the bones, but as the surfaces of the bones are weathered and abraded, such traces could have been obliterated.

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METALLURGICAL ANALYSIS OF TWO ARTEFACTS FROM A BURIAL AT DE HOOP, KIMBERLEY DISTRICT*

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ABSTRACT

Two earrings associated with a burial on the farm De Hoop, Kimberley District, were analysed metallurgically. Both consisted of relatively pure copper wire, one with an additional ornamental cone of iron. Their similarity to copper ornaments from the dated Riet River burials is discussed.

INTRODUCTION

In June 1991 a donga-eroded burial on the farm De Hoop, on the Vaal River, Kimberley District, was reported to Kimberley's McGregor Museum. It had been found by farmer Mr Gerhard le Roux, who recovered a copper earring from slumped material. A salvage disinterment of what remained of the burial was conducted by the museum, in the course of which a second, more complete, right earring was found *in situ*.

The burial was that of a juvenile, probably Khoisan, on the basis of the burial pattern (Morris, Kiberd, Fourshé, Miller & Evans in prep.). What little of the skeleton was left, after erosion and damage by a termite nest in the middle of the burial, was highly fragmented and friable. But the positions of limb bones and the cranium indicated horizontally flexed interment. Specularite was found on the cranium, while traces of ochre occurred on grave goods including beadwork. Erosion had exposed and truncated the back left portion of the cranium, and the earring picked up by Mr le Roux came from the slumped material here. Copper staining was observed on the right mandibular and ear regions, immediately adjacent to the second earring (De Hoop 1A right), which is consistent with findings by Morris (1981) on copper discolouration of bone in burial contexts. Corresponding bones from the left side of the cranium had slumped away and disintegrated so that, had any copper staining been present, the original placement of the first earring could not be verified similarly. A detailed account and assessment of the burial as a whole is in preparation (Morris *et al.* in prep.).

The present report concerns the metallurgical analysis of the two earrings, submitted to the Archaeology Materials Laboratory at the University of Cape Town. The analysis was performed to identify the metal from which they were made and to provide an analysis of their major element chemistry for comparison with similar artefacts.

ANALYTICAL METHODS

The specimens were photographed, weighed, sketched, measured, and their visual appearance described. Small sections were cut from the ends of the wire hooks. These samples were mounted in acrylic resin under vacuum to remove air bubbles and ground and polished on rotary laps using standard metallographic techniques.

The polished sections were studied with a Reichert-Jung Polyvar dual metallographic/petrographic microscope, using plane polarised light and Nomarski differential interference contrast where appropriate. Grain size was established by visual comparison with standard charts (ASTM 1981). Microhardness measurements were done on a Shimadzu microhardness tester, with a load of 200 grams and a 10 second dwell

time. A Cambridge S200 scanning electron microscope with a KEVEX energy dispersive X-ray fluorescence micro-analysis system (EDS) was used for the chemical analysis of the metal and selected inclusions. Analyses were done in spot mode with an analytical volume approximately 1 micron in diameter. Software ZAF corrections were applied to the analytical results to produce semi-quantitative analyses expressed as atomic percent normalised automatically to 100 percent. This system has a precision of about 1 percent for the detectable elements, in this case those with atomic weights greater than sodium. The lower limit of detection is about 0,1 percent under optimal conditions.

DESCRIPTIONS AND ANALYTICAL RESULTS

De Hoop 1A right

This was a compound earring, found *in situ* in the burial, consisting of a hollow cone of iron sheet suspended from a curved copper hook (Fig. 1). The copper wire was about 1,5 mm in diameter, lightly corroded, and covered in a bright green corrosion product. The iron cone was severely corroded and cracked, and was dark brown. The total length of the earring was 20 mm and the diameter of the cone at the base 10 mm. The total mass was 0,649 g. The corroded iron cone was weakly magnetic. The connection between the copper and iron appeared to be mechanical rather than a soldered joint, but the geometry of the connection was obscured within the corrosion product.

Fig. 1. The right earring.

The iron was too corroded to be sectioned profitably but a short length of copper wire was removed from the end of the hook. Two types of inclusions were visible in the polished section (Fig. 2 & 3). Trapped surface oxides formed elongated and contorted blue strings along which further corrosion had taken place. There were also numerous bands of tiny rounded globules arranged in strings parallel to the length of the wire except near the tip where they formed contorted swirls recording the former deformation in shaping the rounded end. These globules were blue in reflected light with characteristic red internal reflections identifying them as cuprite (Cu_2O) (Craig & Vaughan 1981). They were completely rounded which was a result of hot-working of the metal. They

Fig. 2. Polished section of the right earring (12x).

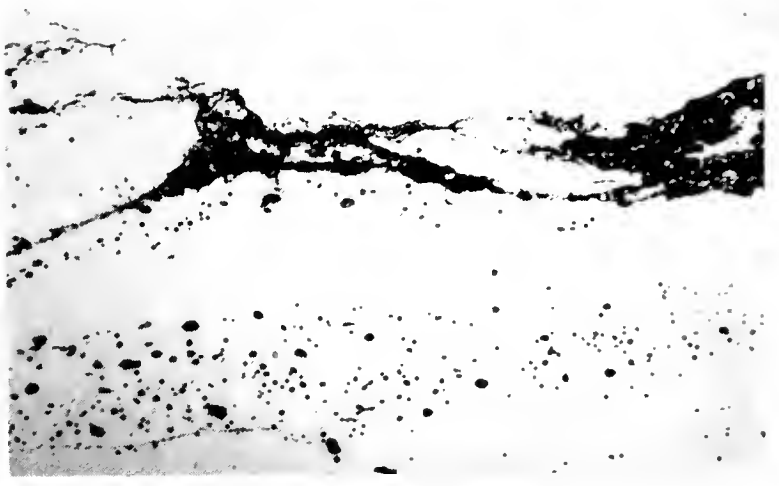

Fig. 3. Polished section of the right earring showing trapped oxide bands and rounded cuprite inclusions (375x).

originated as cuprite droplets in a typical Cu-O cast alloy which was wrought and then annealed (cf. Brooks 1982, Fig. 8-4). The EDS analysis of selected copper grains and of several cuprite inclusions revealed no detectable elements other than copper.

The polished longitudinal section was etched in alcoholic ferric chloride ($FeCl_3$) solution to reveal the microstructure (Fig. 4). It consisted of very fine, equiaxed, recrystallised copper grains with annealing twins, and a grain size of about ASTM 9. The annealing twins were evidence of cold work followed by heating to above about 300 °C (Maddin, Wheeler & Muhly 1980). The very fine grain size was an indication that the artefact had not been held at high temperature for very long. The Vickers microhardness was HV 116 (200 g, 15 s, n = 5, range 107-139) which is high for annealed copper (cf. HV 53 for fully annealed tough pitch copper strip (Smithells 1967:801)) and was due probably to the fine grain size and residual strain of cold-work.

The copper wire in this earring was made of very pure copper with only oxygen as an appreciable additional element. The metal had been hot- and cold-worked, and annealed briefly above about 300 °C.

De Hoop 1B left

This specimen was the one recovered by Mr le Roux

Fig. 4. Etched section of right earring showing recrystallised copper grains (375x).

Fig. 5. The left earring.

Fig. 6. Polished section of left earring (12x).

from material eroded out of the burial, and appears to have been another compound earring. It consisted of a copper wire, about 2 mm in diameter bent around into nearly a full circle, with a shaft terminating in a small hook (Fig. 5). It was lightly corroded, and covered in a bright green corrosion product. If this earring originally had an iron cone it probably was corroded completely after being exposed by erosion. The total preserved length of the earring was 15 mm. The mass was 0,247 g and it was non-magnetic.

A sample was removed from the end of the curved wire and a longitudinal section was polished and etched to study the microstructure (Fig. 6). There was some intergranular corrosion at the margins of the section but otherwise the appearance was the same as De Hoop 1A right. There were elongated and contorted stringers of surface oxides trapped during hot-working and numerous bands of tiny cuprite globules (Figs. 6 & 7). The EDS analysis of metal grains and cuprite inclusions in this specime n also failed to reveal any detectable elements other than copper. The metal consisted of angular recrystallised copper grains with annealing twins and a grain size of ASTM 7 - 9 (Fig. 8). The Vickers microhardness was HV 92 (200 g, 15 s, n = 5, range 66-108). This metal was not significantly different from the material used for the hook of the other earring. The difference in Vickers microhardness was probably due to slightly different intensity of cold-work and annealing.

Fig. 7. Polished section of the left earring showing trapped surface oxides and rounded cuprite inclusions (375x).

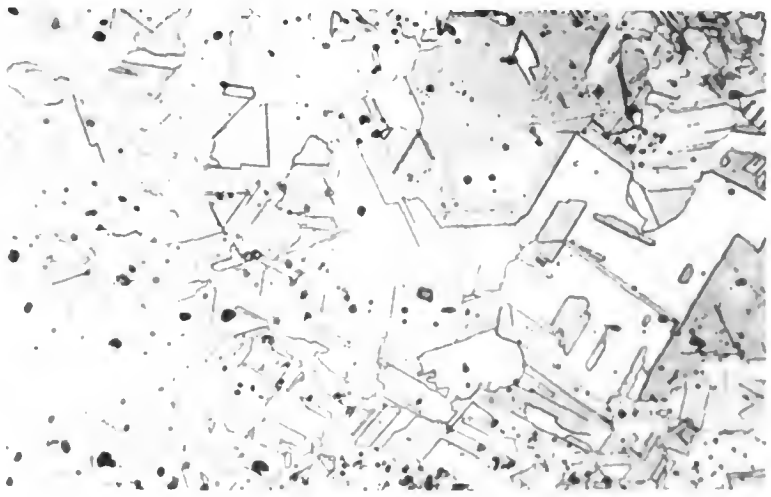

Fig. 8. Etched section of left earring showing recrystallised copper grains (375x).

DISCUSSION AND CONCLUDING REMARKS

These earrings probably originally formed a matching pair. The conical iron pendant on the left earring had corroded away entirely while the right earring still retained some highly corroded remnants. The

microstructure of the copper wire used for the suspensory loops was similar to material excavated elsewhere in southern Africa, although it could not be distinguished from tough pitch copper wire of European manufacture on the basis of its chemical composition. The fabrication techniques were also consistent with those seen in other indigenous copper jewellery but these are not necessarily exclusively characteristic of indigenous production.

Nevertheless, comparative material from the region (Morris 1981), both historically described (Burchell 1822) and recovered archaeologically (Humphreys 1970), permits some comment on the possible affinities of the earrings from De Hoop. Their basic "ear-drop" form, a decorative shank hanging from a wire hook piercing the ear lobe, was widely noted in the interior of southern Africa in both Khoisan and Sotho-Tswana contexts (Morris 1981). Known sources of smelted copper in the interior were all within areas of Iron Age control, from which the material was traded as ingots and finished ornaments on a wide front in the late eighteenth and early nineteenth centuries. In the northern Cape, metal artefacts at Later Stone Age sites provide some of the evidence for burgeoning interaction between Khoisan and Sotho-Tswana communities in the region, during the preceding centuries (Humphreys 1988; Morris 1992). The De Hoop burial augments this evidence.

The burial has not as yet been dated, but some idea of the age range into which it could fall is provided by radiocarbon readings on two comparable Riet River burials which contained copper ornaments (Morris 1992:33). These are MMK 329 with a date of 110 ± 50 BP (Pta-247) [AD 1840], and MMK 277 dated to 890 ± 50 BP (Pta-2898) [AD 1060] which is surprisingly early. An interesting aspect of the De Hoop earrings is the degree of resemblance of De Hoop 1A right to the two larger earrings found with the burial MMK 277, from Weltevrede near Koffiefontein (Humphreys 1970; Morris 1981). The burial and grave goods recovered by W. Fowler in the late 1930s were described by Humphreys (1970). Fowler dubbed the conical ear-rings "snuffers", and the word "extinguisher" was used in the McGregor Museum Accession Catalogue (Humphreys 1981) to describe the hollow cones attached to them, like De Hoop 1A right. Unlike the De Hoop example, the Weltevrede cones were crafted from copper sheet, and were about twice as big. While these and other metal items from this region await closer definition, the De Hoop analysis reported here adds to a growing metallographic data base on southern African metal artefacts.

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REPORT ON HUMAN SKELETAL REMAINS FROM ROOIBERG (TRANSVAAL)*

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ABSTRACT

A human skeleton from the Rooiberg area is described. The skeleton is that of a juvenile, about 8-9 years of age. Marked enamel hypoplasia is present in the form of linear defects. The age at formation of these defects varies between 1,9 and 4,6 years. This is consistent with published results, since the period around weaning is often associated with nutritional deficiency and high susceptibility to disease.

INTRODUCTION

The Rooiberg tin mining complex is situated in the Transvaal, about halfway between Warmbaths and Thabazimbi. A human skeleton was accidentally discovered here in a footpath. No information on the exact location or mode of burial is available. The skeletal material consists of most of the cranium, mandible and parts of the diaphyses of both tibiae and femora as well as a humerus (Fig. 1). It is stored at the Anatomy Department, University of Pretoria (UP 7).

Other skeletal finds from this area include the one described by Dart (1924), and those three described by De Villiers (in Hall, 1981). De Villiers concluded that one of the male skeletons (burial I) displayed signs of malnutrition, due to the presence of long bone flattening (Lisowski 1968). Morris (1987), however, showed that flattening of the tibial shaft is a common feature in local population groups. All these skeletons were described as being of Negro origin.

RADIOCARBON DATING

The dating was done by Dr J. Vogel of the CSIR. A date of 300 ± 60 BP (Pta-5894) was obtained, with a most probable calibrated date of AD 1648. A log found in the pre-historic mine dated to the 15th century (Vogel 1970, GrN-5138). Four other dates from this complex of sites (Pta-2845, -2847, -2849, -2850) are published in Hall (1981), ranging from AD 1470 to AD 1760 (calibrated). The date for this skeleton of 300 ± 60 BP, places it within the second phase, stone wall tradition of the Late Iron Age (Hall 1985).

Researchers, for example Maggs (1976) and Lye & Murray (1980), have indicated that the archaeological sequence went back a long period of time. It is thus possible that the people living in the Rooiberg area at the time were ancestral to modern populations. One could thus suggest, on cultural evidence, that this child was of Sotho/Tswana origin.

AGE

Aging was done according to formation and eruption of teeth (Ubelaker 1989, El Nofely & Işcan 1989). Both upper and lower, central and lateral incisors as well as all the first permanent molars are erupted and in occlusion; thus the age was determined as 8-9 years. Since these are the remains of a juvenile, no attempt at sexing was made.

TEETH

The teeth show marked attrition. Tartar is present on the first left upper deciduous molar. Enamel hypoplasia in the form of horizontal grooves is present on both first permanent molars, left canine, right lateral incisor and left first premolar in the maxilla and on all the lower incisors and left permanent canine (Fig. 2). These hypoplasias are deficiencies in enamel thickness resulting from systemic disturbances (stress) during the secretory phase of amelogenesis (Goodman & Rose 1990). Most of the hypoplasias in archaeological material are caused by acute episodes of malnutrition or febrile diseases, while defects due to hereditary anomalies and localised trauma are rare. Due to the inability of enamel to remodel, and their regular ring-like development, these defects provide a permanent chronological record of stress during the formation of tooth crowns. Sciulli (1977) found that agriculturalists had a higher frequency of severe enamel hypoplasia on deciduous teeth.

Sarnat and Schour (1941) were the first researchers who focused on the chronometric potential of enamel hypoplasias. Most of the current research to determine the individual age at defect formation rests on the

Fig 1. The skull and mandible.

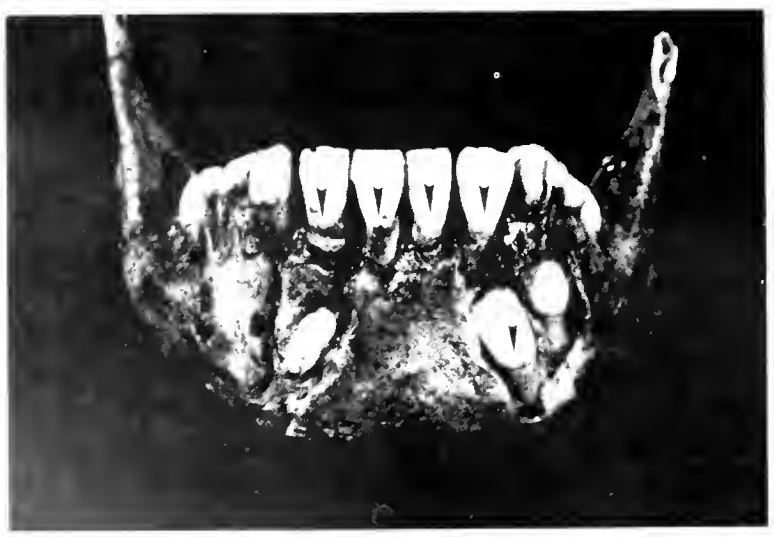

Fig. 2. Enamel hypoplasias on the mandibular teeth.

standard established by Massler, Schour and Poncher (1941). In our study we used the regression formulae published in Goodman and Rose (1990) which are based on the mean crown heights of Massler *et al.* and Swärstedt (1966). The distance from the cemento-enamel junction (CEJ) to the linear enamel hypoplasia (LEH) was measured on each tooth, and the age at formation calculated. The results are shown in Table 1. Only the permanent teeth displayed LEH.

Ages at formation of the defects vary from 1,9 to 4,6 years with an average of 3,1 years. This result is consistent with other published results in which it was found that these abnormalities tended to form around 2 to 4 years of age (Saul & Hammond 1974, Corruccini, Handler & Jacobi 1985). Post-weaning stresses might be responsible for this peak (Corruccini *et al.* 1985, Hillson 1979), since a child is most susceptible to diseases during this period.

Table 1: Age determination at the formation of LEH.

	Distance*	Age (in years)
Maxilla:		
Lateral incisor (right)	4,1 mm	2,9
Canine (left)	2,5 mm	4,4
Premolar 1 (left)	4,1 mm	4,0
Molar 1 (left)	3,6 mm	1,9
Molar 1 (right)	3,4 mm	2,0
Mandible:		
Central incisor (left)	2,7 mm	2,8
Central incisor (right)	2,2 mm	3,0
Lateral incisor (left)	3,1 mm	2,7
Lateral incisor (right)	2,3 mm	3,0
Canine (left)	3,2 mm	4,6

*From CEJ to LEH

CONCLUSION

The teeth of this child, aged 8-9 years, display distinct enamel hypoplastic defects. These lines were formed between 1,9 and 4,6 years of age, probably due to episodes of malnutrition and acute disease in the post-weaning period.

ACKNOWLEDGEMENTS

We would like to thank Dr J.C. Vogel for providing the radiocarbon dating, and Mr M. Loots for the photographs. We are also grateful to Prof M. Henneberg for his encouragement.

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CONTRACT ARCHAEOLOGY REPORT

ARCHAEOLOGICAL RESOURCES MANAGEMENT (ARM), UNIVERSITY OF THE WITWATERSRAND

ARM is part of Wits' Archaeology Department specifically created to handle CRM contracts generated by recent environmental and mining legislation. So far, most of the work has involved the identification and evaluation of sites threatened by dams, roads and mining activity.

Kathy Kuman and Gary Kruger continue their analysis of Stone Age sites found during the Taung Dam survey. Kathy is interested in the technological aspects of an ESA quarry, and Gary excavated a rock shelter with a burial at the base and a recent LSA sequence on top of Oakhurst layers. Rock art near the shelter was published in the first volume of South African Field Archaeology.

Another dam survey, Zoeknog Dam near Bushbuck Ridge, yielded more recent sites as well as a few Stone Age localities. There were 3 ESA, 8 MSA, 3 LSA, 7 EIA and 18 recent IA sites in approximately 22 hectares. The EIA pottery probably dates to the second phase of Lydenburg, while most LIA sites were marked by Moloko pottery. Unexpectedly, there was one LIA site with Venda pottery.

Even more recent sites were found along a 36 km roadway between Nigel and Fochville. Although there were a few Stone Age sites (3 ESA, 4 MSA and 2 LSA), the most important were the remains of European structures. The stone foundations of two "bywoner" homes were associated with the more substantial deposit and foundations of the main homestead. Coupled with the finds from an earlier survey in the same area, these buildings form part of a historic sequence encompassing the first trekboers and their living descendants.

In a completely different vein, ARM has been involved with the mitigation of a prehistoric copper mine near Matsitama in Botswana. Dating to the Khami period, some 30 episodes of digging around visible reefs produced a large open cast mine about 30 m wide and 175 m long. We mapped the mine using a new laser theodolite (Easy Ranger 7/50) developed in South Africa by Yelland Drawing Office and Survey Centre.

T.N. Huffman
G. Kruger
H. van der Merwe

LETTERS AND COMMENTS

The editors

The issue raised in the Opinions column of the last edition of SAFA - the question of access to, and payment for the use of, regional archaeological archives - is a sensitive one, but one that is specially pertinent to those institutions whose business it is to build up regional collections and the records and analyses that define them. Such data bases - largely museum-based - often represent decades of input by the host institution, and involve costly on-going collection management, including storage and record-keeping, up-grading of documentation, and, recently, computerisation. When, therefore, requests for information are made, the resulting search and presentation of data (which seldom can be a mere print-out) add to the cost of an already costly exercise.

Museums, as you suggest, are glad to see their collections and data bases used by *bone fide* researchers, and usually go out of their way to accommodate and assist them. But when those who have sought information are engaged in commercial contract work, then surely, like any other commercial users of museum services, one would expect that they should pay for it. That acknowledgement should be made of the source of the data in all publications and work generated from consultancy - commercial or otherwise - is fundamental to research ethics.

It is a fact that some agencies have built up independent data bases ultimately derived from these museum records, but these can be no substitute for the services and local expertise that regional recording centres can provide. Archaeological coverage of a region can never be 100% complete, so that any given corpus of data needs interpretation in the light of experience when supplied. This is not always appreciated and we recently saw an EIA (not compiled by an archaeologist) which suggested that the nearest archaeological occurrence to a given building site was more than 50 km away! This was based on some listing of selected Northern Cape archaeological sites that the agency had acquired and was using in regular assessments. On inspection, the building site itself was found to contain, *inter alia*, a low-density surface scatter of late Acheulian artefacts.

As a final comment, the National Monuments Council requires that the material resulting from any archaeological study, including contract work, be lodged with an acceptable institution for curation - usually a museum. As you suggest, the 'time- and space-consuming component' of keeping a collection is costly (and ultimately not sustainable on the present basis), so that users of these facilities - especially in the case of contract work - need to consider building into project budgets some contribution towards these services as well.

David Morris
McGregor Museum, Kimberley.

INSTRUCTIONS TO AUTHORS

It is the responsibility of the author(s) to submit accurate, well-prepared manuscripts. The editors reserve the right to reject or return manuscripts for revision or retyping if they do not comply with the provisions as set out below. This decision, however, will be taken in consultation with the editorial board appointed by *Southern African Field Archaeology*. Manuscripts submitted to *Southern African Field Archaeology* will be refereed by at least two members of the editorial board or by referees appointed by them.

Manuscripts submitted to *Southern African Field Archaeology* should not be under consideration by any other journal at the same time, or have been published elsewhere. Manuscripts are accepted for review with the understanding that the submission has been approved by all of the authors concerned. Authors bear the responsibility for securing permission for the use of figures, maps, and other material which is not their own. If personal communications are used it is understood that such citations have been approved.

The length of manuscripts is a matter for agreement between the author(s) and editors. Manuscripts should, however, not normally exceed 5000 words in length. Initially, three good quality copies of the manuscript, figures and tables must be submitted to the editors. If photographs are included in the manuscript, send only one set. Faxed copies will not be considered for refereeing.

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- Title at the top of the page.
- Author(s) name.
- Full postal address.
- Abstract of 100 to 150 words summarising the main points.
- Acknowledgements must appear at the end of the manuscript.
- All references quoted in the text must appear after the acknowledgements. Use Harvard system for references, but do not italicise book titles and journals.

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Radiocarbon age and equivalent uncalibrated date and laboratory number must be given in the text when dates are cited for the first time, e.g., 5000 $\pm$ 50 BP (Pta-123), 10 000 $\pm$ 200 BP (Pta-456) and AD 200 $\pm$ 50 (Pta-789) (note spacing). Do not use full stops after BP, BC and AD. Indicate when dates have been calibrated.

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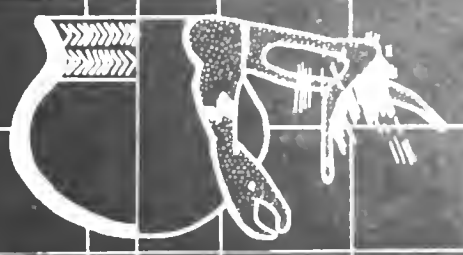

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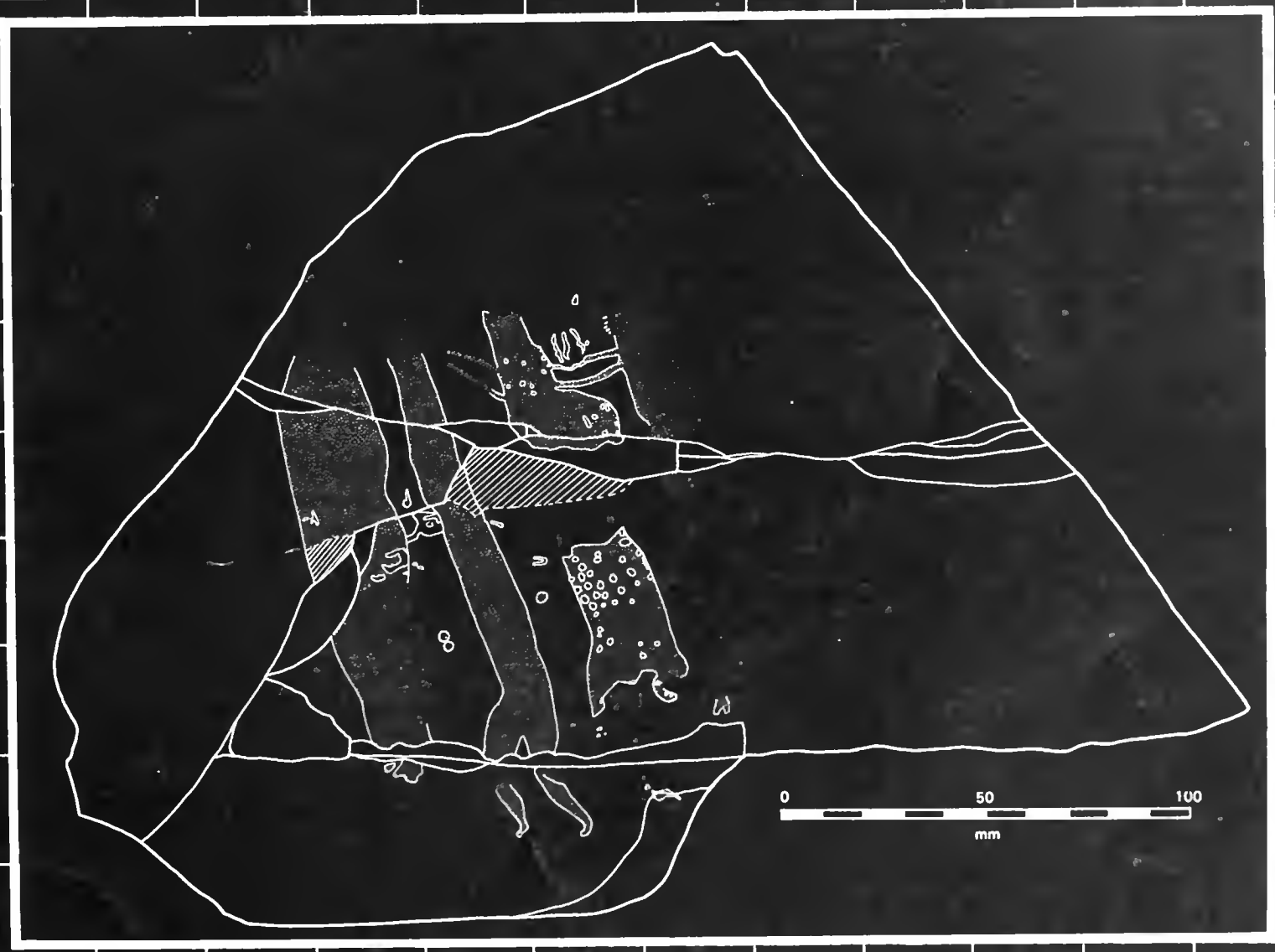

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The aim of *Southern African Field Archaeology* is to communicate basic data to professional archaeologists and the public.

Manuscripts of original research undertaken in southern Africa will be considered for publication. These may include reports of current research projects, site reports, rock art panels, rescue excavations, contract projects, reviews, notes and comments. Students are encouraged to submit short reports on projects. Southern African Field Archaeology also welcomes general information on archaeological matters such as reports on workshops and conferences.

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Logo
Decorated pot from an Early Iron Age site in the Great Kei River valley, eastern Cape, and a painting of a 'trance figure' from the same region.

Cover illustration
Painted slab from Roodekranz Shelter near Alicedale, eastern Cape, p.89.

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OPINIONS

Employment, and the prospect or lack of prospect of employment, is a major concern of archaeologists and those wishing to pursue archaeology as a career. A functional classification of archaeologists could be based on their employment status: permanent teaching staff at universities and research staff at museums; researchers working at universities and museums on relatively short-term contracts, bursaried post-graduate research students; unpaid undergraduate students; and amateurs.

Amateurs may struggle to get permission to conduct research involving excavation and university staff may struggle to raise research funds to finance their endeavours, but to their good fortune they are not confronted by the question that perpetually plagues the others - when and where, if ever, will I get an archaeology job?

We all know that there are fewer than fifty permanent professional posts in archaeology in southern Africa, and that most of them are occupied by relatively youthful people, mostly with decades of employment ahead of them. We also know that the global recession makes it very unlikely than many professional archaeologists will leave for posts overseas. And we tacitly acknowledge the need to keep student numbers up, if not increasing, in universities to justify the continued employment of those paid to teach and direct research at those institutions. With the employment bus apparently stalled, is there sense in piling more people on board? What real employment prospects do students, from undergraduate to post-doctoral level, face?

Many students who may have an interest in archaeology avoid it at university because of the lack of employment prospects. This may explain the dearth of black student enrollment in undergraduate archaeology courses. Glossy pamphlets promoting careers in archaeology are not likely to succeed if the honest answer to the question "Will I get a job when I qualify?" is "Probably not". Many undergraduates respond to the perceived employment crisis by abandoning archaeology after an introductory course - sensible but disheartening for their lecturers. Post-graduate students and contract researchers thrash around, consuming increasing proportions of their productive energy on job hunting, writing applications, wringing yet another year's grace out of a shrinking pool of research funding, and contemplating alternative careers like housewifery, computer programming, gemmology, and goat farming in Venezuela.

Realistically the availability of permanent employment for archaeologists cannot be expected to increase. Nor will the shrinking sources of research funding suddenly erupt in plenitude. The employment crisis for undergraduates and contract researchers is real and deserves recognition. By relieving the sense of personal failure, recognition of the global nature of this crisis is in itself beneficial for graduates who are unemployed or about to be unemployed. Young graduates should be appraised of the reality of the situation and consider if it is wise to gain yet further qualifications that will not necessarily improve their prospects. The available financial resources for full-time but short term research appointments are spread very thin and senior post-graduates and contract researchers may be wise to hone whatever alternative skills they may have or actively explore the new prospects emerging in the field of contract rescue archaeology and development consulting. At present this enterprise tends to be dominated by the universities and the transition to a competitive market may be rough going for independent individuals or small consultancies.

If tinkering with the engine and trying to push the bus both fail then it is sensible to consider walking. One could consider putting the bus to novel uses. A training in archaeology should equip one to more than excavation, sorting, analysis, and the production of research reports. That is the legitimate domain of academic archaeoloigsts but another chronically underpopulated field of enterprise exists which archaeology graduates should be well placed to occupy. This field encompasses journalism, popular authorship, and non-university education.

The popular demand for access to the fruits of largely government-funded scholarship is hard to ignore and many academic archaeologists in this country have striven to make their output more accessible. But it is unreasonable to expect highly qualified and specialised academics to fulfill the role of popular educators and simultaneously maintain a high level of research output. There is an almost total lack of trained writers and illustrators who concentrate on communicating technical and academic discoveries to the public in ways that are appropriate and factually accurate. Students need to be trained in writing and communication skills that will not only enable them to produce arcane and abstruse theses but will also equip them to convey the substance of scholarship in popular contexts without dismal corruption of the content.

Academic archaeology is well placed to play the necessary catalysing role of providing a broad education. Archaeology students are exposed, or should be, to the full spectrum of human enterprise. They study human social behaviour, technological endeavour, biological development, and interaction with the environment, and should have a sufficiently sound understanding of anthropology to be able to relate knowledge of the past to current human concerns. Archaeology should be an exciting and profoundly civilizing study and it should inspire its graduates to communicate their knowledge. The demand for popular education could be met with the conscious response of aiming to equip at least some archaeology students as educational writers or illustrators. This would relieve some of the pressure on academic researchers to popularise their work personally, would address the growing need for factually accurate but readily accessible accounts of academic research (not only in archaeology), and provide new avenues for potential employment for archaeology students.

I suspect this could be accomplished relatively easily with the introduction of courses such as "Writing and Communicating Archaeology", setting out explicitly to teach clear verbal and written expression, a variety of styles of presentation, skill in appropriate choice of illustration, text and display layout, word processing, lecturing to non-academic audiences, exhibition presentation - in short, communicating archaeology and human science outside as well as inside an academic context. This involves real skills training with the clear objective of enhanced employability. We probably could all benefit from such training.

Duncan Miller
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University of Cape Town.

* * * * * *

This issue of Southern African Field Archaeology marks a departure from our editorial policy of publishing site reports and research notes. The debate regarding the archaeological identity of hunters and herders which readers may have been following in the South African Archaeological Bulletin is continued in this journal with a critique by Yates & Smith followed by a response from Schrire. We are publishing these papers in Southern African Field Archaeology because the South African Archaeological Bulletin is only able to publish them in the June 1994 issue.

* * * * * *

The Editors of Southern African Field Archaeology are running a competition for the best report by an archaeology student. The winner, as well as his/her Archaeology Department, will each receive one year's subscription to Southern African Field Archaeology, absolutely free! The majority of post-graduate archaeology students will have either excavated a site or undertaken an archaeological related project at some stage of their university careers. Although students are required to write theses or reports on their research most of this material is never published and professional archaeologists often find it extremely difficult to trace this material. By publishing a summary of your thesis or report you will be contributing to the wider dissemination of archaeological knowledge. You will also be learning new skills in writing scientific papers. This type of experience is vital for those students wishing to pursue a career in archaeology. So we urge university lecturers to encourage students to submit articles and we hope students will be motivated to participate. Remember, the deadline is the 30 November 1993, but may be extended to mid-January on request.

Southern African Field Archaeology 2:59-66. 1993.

LATE HOLOCENE AND HISTORICAL BONE MIDDEN DENSITY IN ROCK SHELTERS OF THE UPPER SEACOW RIVER VALLEY*

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ABSTRACT

Many different taxa are represented in the faunal remains from upper Karoo rock shelters. However, meaningful frequency changes in individual species cannot be detected. An alternative approach is to measure changes in bulk faunal mass per unit volume of deposit. When the faunal contents of nine shelter fills were processed in this way it was found that at least two densely packed layers of mammal remains occurred at the same levels in all shelters. The lower midden, dating to ca 800 BP is usually the smaller of the two. It may be compressed with an even earlier midden of ca 1100 BP in a few shelters. The uppermost midden is better defined, with peak densities at ca 400 BP. As the three midden dates coincide with marked increases in grass over scrub pollen in local hyrax dung accumulations, and with small temperature fluctuations in the Cango speleothems these events may reflect increased Bushman hunting activity during spells of greater carrying capacity. Historical levels coincide with a sharp drop in faunal density in all but one shelter.

INTRODUCTION

None of the several Late Holocene faunal assemblages from Upper Karoo rock shelters (Sampson 1967:58-60, 1970:67; Deacon 1976:230; Klein 1979:42-3) show significant species fluctuations through time. Although some assemblages are quite large, the range of species present is considerable and few taxa are represented by more than a dozen specimens per sample. Some are represented only by solitary specimens. When an assemblage is divided into stratified or (in most shelters) arbitrary spit-based subunits, numbers of even relatively well represented taxa are reduced to a few specimens per layer. Typically, tables of percentages contain many columns of taxa, each filled with very low values. Visible fluctuations in frequencies of taxa through the layers (or spits) are rendered trivial or meaningless on account of low sample sizes. Consequently it is impossible to determine whether or not there were fluctuations in the procurement patterns of non-domestic mammals by upper Karoo hunter-gatherers.

Here, we present a promising alternative approach designed to bypass the problem posed by small sample totals. It also overcomes the effects of excavating by arbitrary spits in deposits without visible stratigraphy. The methods of recovery and analysis are briefly described, and the results from a cluster of nine rock shelters in the upper Seacow River valley (Fig. 1) are compared. Finally the shared patterns of fluctuating bone midden density are compared with palynological data from the same area, and with paleotemperatures estimates from the more distant Cango speleothem record.

METHODS

Our recovery and recording methods are a compromise between the expense and slowness of point-plotting and the faster, cheaper procedure of removal in metre squares

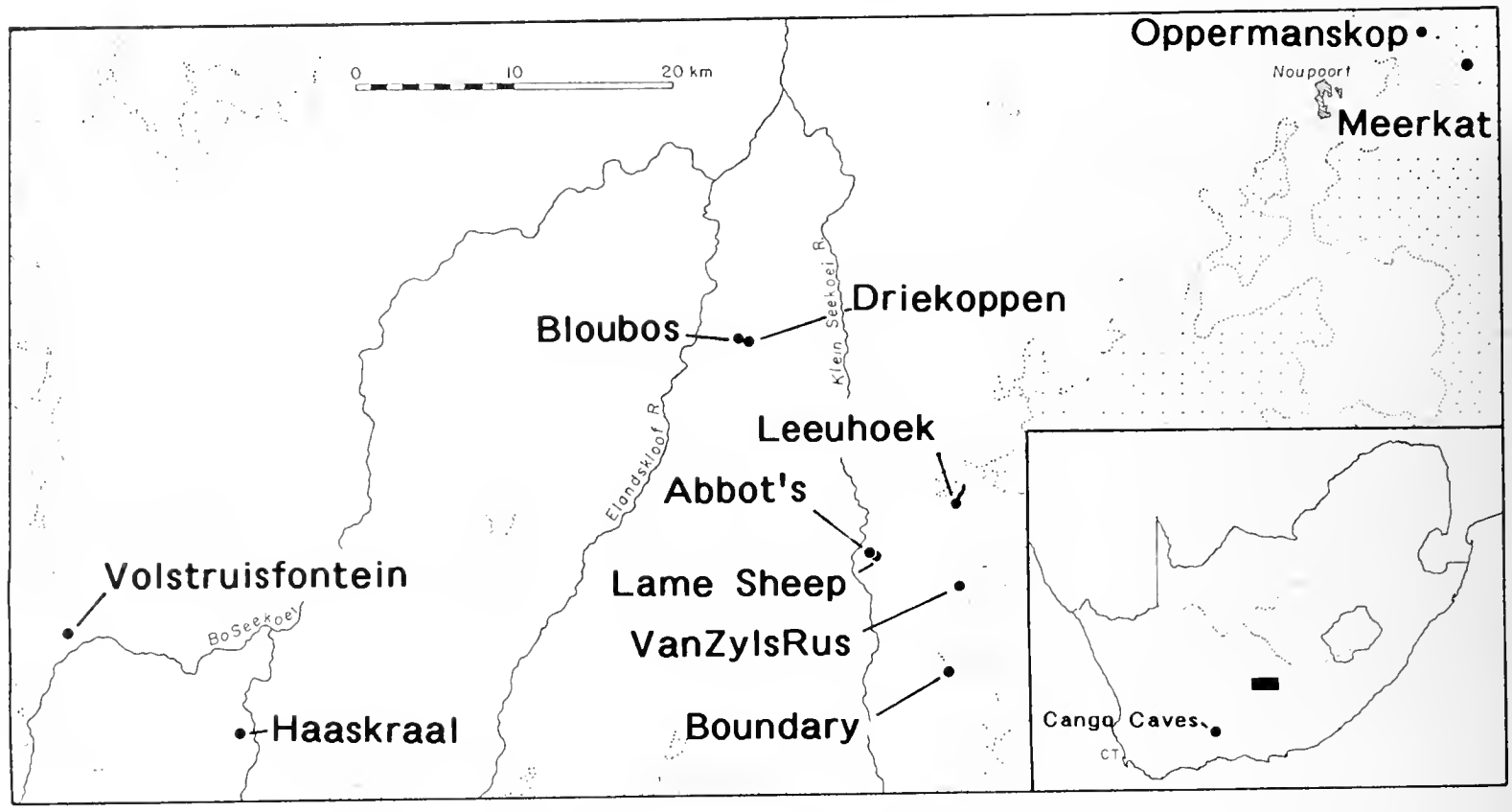

Fig. 1. Location of sites in the upper Seacow River valley, showing tributary channels and mountains (stippled). Inset: Location of the study area in relation to Cango Caves.

with no recording control of horizontal provenience within the the square. We divide the square into 16 blocks, each removed and bagged separately. Where no micro-stratigraphy is visible for depth control, the thickness of the removed block is kept between 25-30 mm (Sampson *et al.* 1989:7). The block's volume is ca 1,6-1,8 litres, between a third and a half of an average bucket. Although not precisely standardised as a unit volume of deposit, it has proved adequate for our purposes. Where the deposit contains abundant roof spalls, rock removal forces the depth of the unit to increase, although the volume of sediment is about the same.

As the dimensions of each block is recorded, 250 mm wide slices through the shelter fill can be reconstructed from superimposed blocks, resembling the stone masonry in a wall. As an example, two contiguous slices through Abbot's cave (Fig. 2 top) are illustrated (Fig. 2 center), showing a rocky roof fall zone where block thickness are greater.

When the number of non-domestic mammal fragments is plotted for each block in each slice, the density and packing of bone is found to be highly variable. Next, in order to remove the clutter in these data, blocks containing >100 fragments are plotted alone to isolate patches that can be reasonably termed bone middens. In the example shown here, a lower patch is clearly separated from an upper sheet. (Fig. 2 bottom).

Further synthesis was achieved by projecting blocks with >300 fragments on to composite sections comprising the back eight slices (Fig. 3 top) and the front eight slices (Fig. 3 bottom). Also on to these were projected the positions of blocks with 200-299 fragments and 100-199 fragments. The resulting plots were smoothed to form isopleth lines that reveal density variations within midden seen to comprise different areas and phases of faunal dumping. Without visible interfaces in the deposit, it was impossible to excavate these as discrete units.

The positions of chronological markers can also be projected on to the composite section to assist in estimating the dating range of individual middens. Again using Abbot's cave as the example (Fig. 4), the faint outlines and dense centers of the bone middens are plotted in relation to: the deepest and therefore earliest European artifacts (Saitowitz & Sampson 1992; Crass & Sampson 1993a & b; Moir & Sampson 1993; Sampson in press; Westbury & Sampson 1993); to the earliest European livestock (Plug *et al.* in press; Voigt *et al.* in prep.); to available radiocarbon dates; to the earliest ceramics (Hart 1989:225; Sampson *et al.* 1989); and to sherds with decorations known to have very narrow dating ranges (Vogel & Sampson in prep.).

Although the mammal remains are quite fragmented throughout, there are no significant differences in the median size of bone fragments (ca 18-20 mm) from densely packed lenses or from bone-poor horizons. This holds for al the sites in this study. From this we assume that changes in midden density reflect changes in accumulation rate rather than changes in bone particle size.

THE BONE MIDDENS

Abbot's cave

A small midden accumulated in the front half of the cave and must have reached peak density at ca 800 BP, given the associated radiocarbon date (Sampson & Vogel 1989:1). There is a small patch of high density bone below this, but above the line of earliest sherds that mark the ca 1100 BP horizon (Fig. 4 bottom).

The large, dense upper midden is separated from the

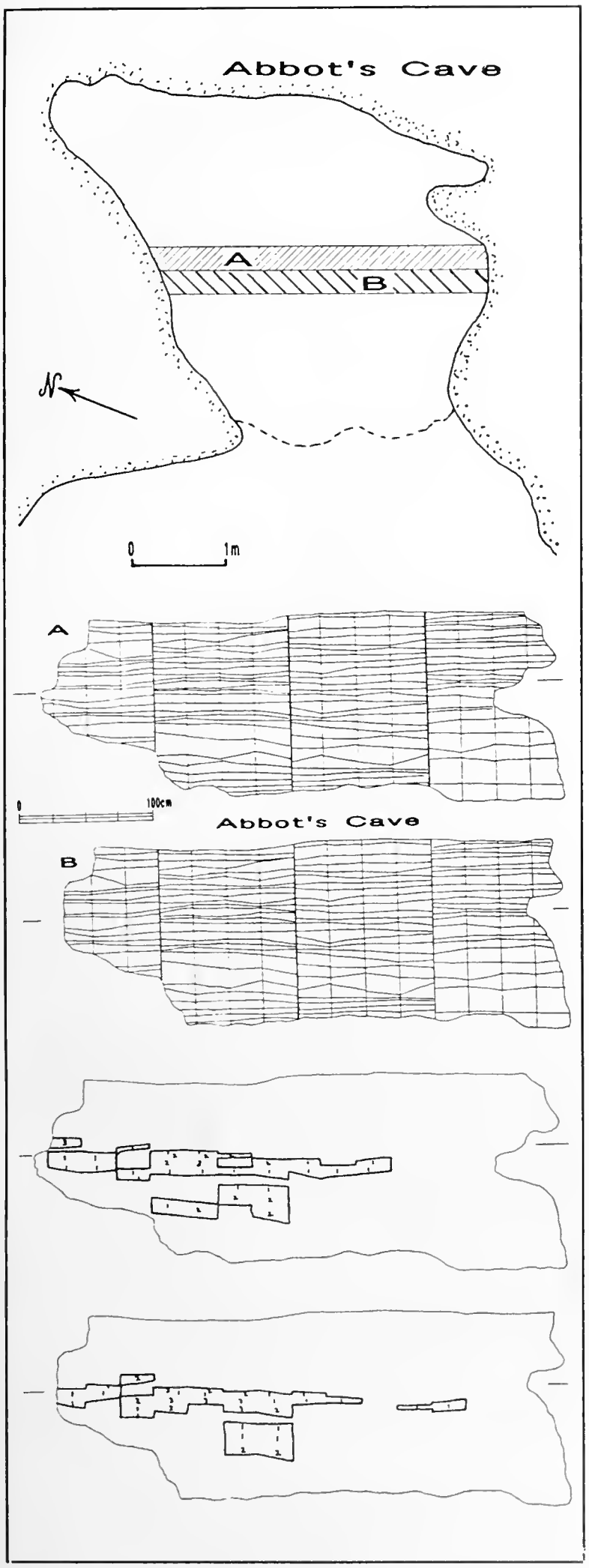

Fig. 2. (Top) Plan of Abbot's cave showing positions of two adjacent slices A and B; (center) side views of the two slices A and B, showing dimensions of excavated blocks; (bottom) slices A and B showing blocks containing >100 mammal fragments. Handwritten numbers in blocks are x100 fragments.

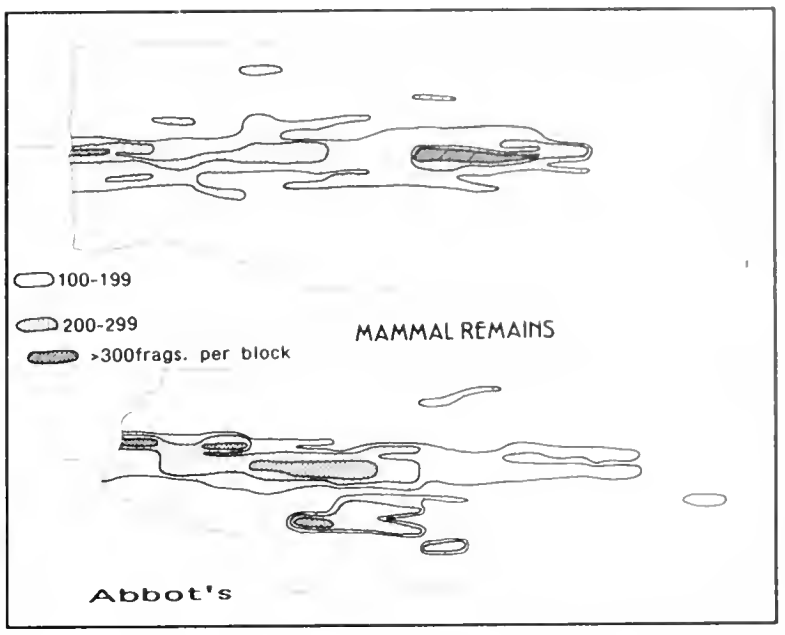

Fig. 3. Abbot's cave composite sections of (top) eight slices through the back half of the fill, and (bottom) eight slices through the front half.

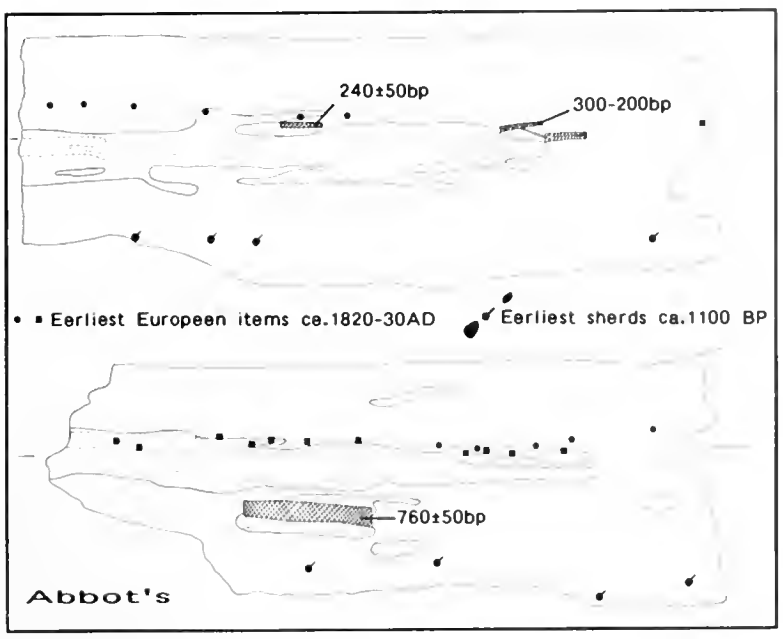

Fig. 4. Abott's Cave composite sections with chronological markers superimposed. European items include artifacts (circles) and livestock remains (squares. The conjoined blocks labelled 300-200 bp contain sherds with a decorative motif of that dating range.

lower by a bone-poor zone. There are hints of density fluctuations in the lower part at the upper midden, particularly at the back of the cave, and the two main concentrations within its core may be of different ages. The range of species present is given in Plug (1993). Four charcoal samples through the rear sequence have been submitted to obtain a refined chronology, and a date of ca 400 BP can be expected for its center. The line of deepest European artifacts in the front (Fig. 4 bottom) includes items not made before the 1820s, but some have been thrust down from above. Livestock were being stolen by local Bushmen after 1870 and were being given to them soon after 1800 (Voigt *et al.* in prep.). The radiocarbon date of 240 $\pm$ 50 BP (Pta-5183) from the back raises the

possibility that midden density may have begun to diminish even before European contact.

Lame Sheep Shelter

Increases in bone fragments per block could be the result of increases in bone smashing and fragmentation rather than increases in game input to the midden. The most efficient way to demonstrate that bone fragmentation rates are not a contributing factor is to weigh (rather than count) the limb bone shaft and other splinters as well as fragments of tooth enamel and other undiagnostic pieces. This has been done for the adjacent Lame Sheep Shelter.

Lame Sheep is not really another site, but an extension of Abbot's Cave, with its rear exit linked to Abbot's through a short, low tunnel that joins the two deposits. The occupation history of Lame Sheep was quite different, however. The first sherds to appear are soon followed by a large dense bone midden well represented at the back (Fig. 5 top) nearest Abbot's, and also at the front (Fig. 5 bottom). Block depths in this very stony deposit were too deep to allow finer stratigraphic subdivisions of the lower midden, but it may be the equivalent of Abbot's lowermost two patches compressed into one. Associated charcoal has been submitted for dating. The large upper midden in Abbot's is reduced to a vestigial trace at the back of Lame Sheep closest to the link tunnel. Evidently the shelter roof disintegrated, making Abbot's the more attractive cavity for occupation. The dense patches in the post-Contact levels of Lame Sheep include some livestock remains, so they are not comparable with the Abbot's record where all livestock had been removed before analysis. Plug (1993) lists the frequency of wild species present.

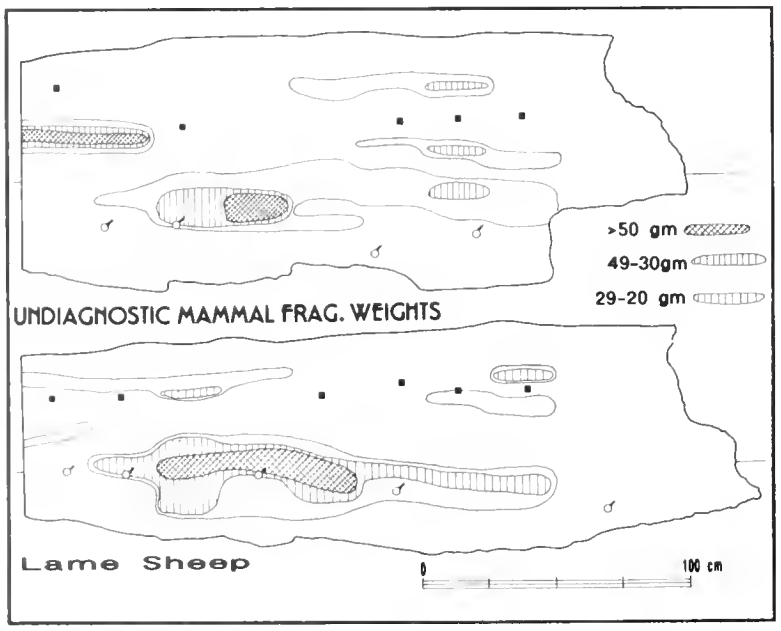

Fig. 5. Lame Sheep composite sections of (top) eight slices through the back half of the fill, and (bottom) eight slices through the front half. Key to marker items in Fig. 4.

Volstruisfontein Shelter

Unsorted bulk fauna weights can also be used to discriminate between middens. In this case, the micromammal, fish, bird, reptile, and amphibian remains have not been removed from the sample before weighing, nor were the diagnostic articular ends and dentition

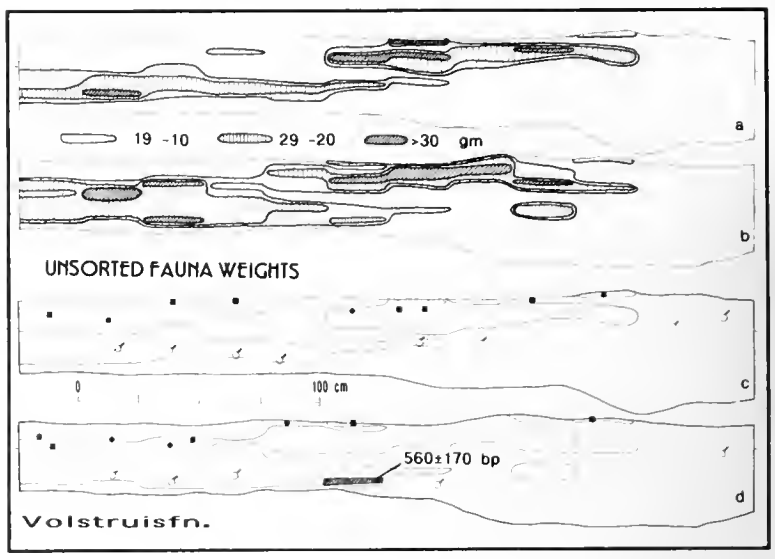

Fig. 6. Volstruisfontein (a, b) adjacent composite sections of two slices each through the fill. Rear shelter wall is to the right; (c, d) same, with chronological markers. Key to marker items in Fig. 4.

excluded. Again, an upper and a lower midden is clearly visible in two composite sections (Fig. 6a & b). The position in Fig 6d. of the radiocarbon date (Hart 1989:161) suggests that the whole sequence is equivalent to the Abbot's upper midden. However, there are hints (fresh micromammal remains) that the charcoal came from a disturbed area, so the lower ceramic line (ca 1100 BP). may be the better marker here. More charcoal dates will be obtained to resolve the question. The European items within the bone midden on the left of Fig. 6d have been thrust downward by churning and are not *in situ*. The top of the bone midden is inflated in a few places into the post-Contact levels because livestock remains are included in the weights.

Haaskraal Shelter

These samples were treated in identical manner to Volstruisfontein, and more charcoal dates are available (Hart 1989:156). Although overall faunal density is much higher at Haaskraal, two middens emerge if the density isopleth values are raised (Fig. 7). Faunal density is clearly very low before 1200 BP. The core of the lower lens of the lower midden dates to ca 1100 BP. and a

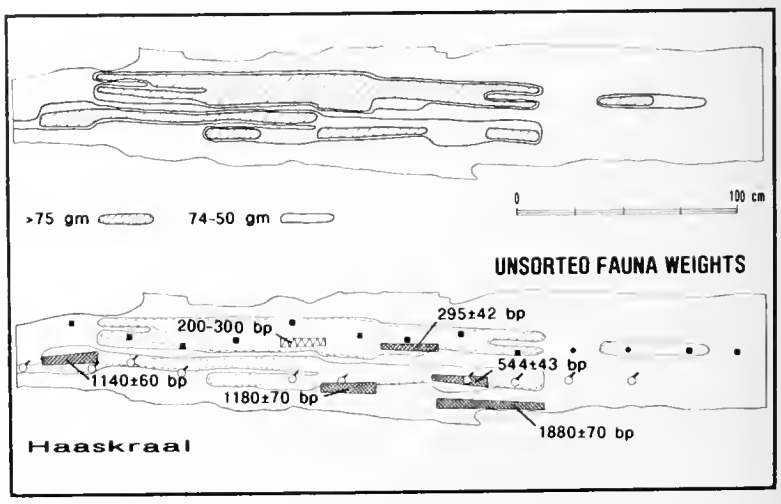

Fig. 7. Haaskraal composite sections of four slices through part of the shelter fill. Rear shelter wall is to the right. Key to marker items in Fig. 4.

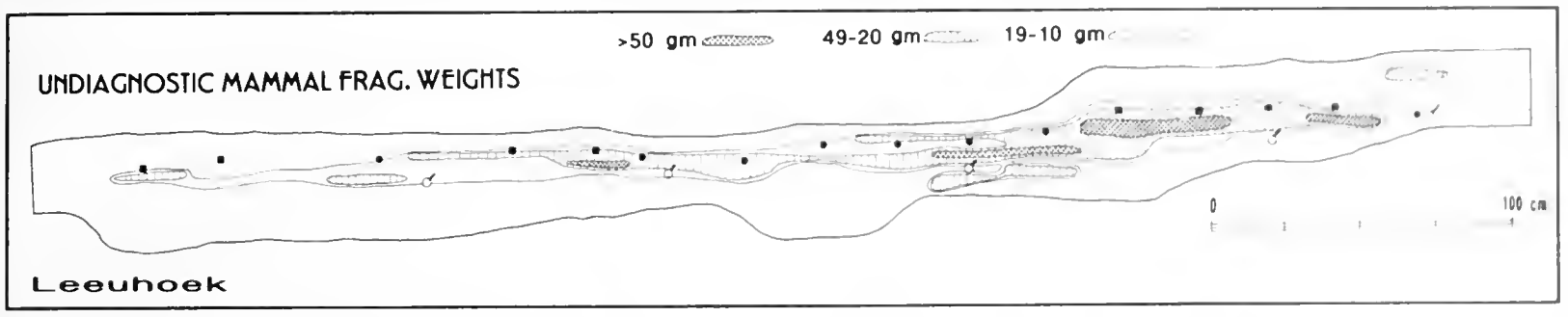

Fig. 8. Leeuhoek composite section of all eight slices through the fill. Key to marker items in Fig. 4.

younger lens of ca 500 BP. has been compressed into it in places. As the layering is not perfectly horizontal, the projected elevations of some dates appear misplaced. The top part of the upper bone midden is inflated by numerous livestock remains, including cattle (Plug *et al.* in press).

Leeuhoek Shelter

This very shallow, compressed fill yielded a rich fauna, but the separation between the upper and lower middens cannot be clearly resolved (Fig. 8). Leeuhoek has exceptionally well defined upper and lower marker horizons.There is a small high density patch in the preceramic level, of uncertain date.

Van Zyls Rus Shelter

The Late Holocene midden is on a visible disconformity separating it from Lower Holocene deposits in which very little fauna has survived (Fig. 9). Here, total non-domestic mammal fragment counts were used to construct the composite section. Like Leeuhoek, the bone midden is too compressed between the two marker horizons to show subdivisions. There is a dense patch of game remains above the earliest European markers.

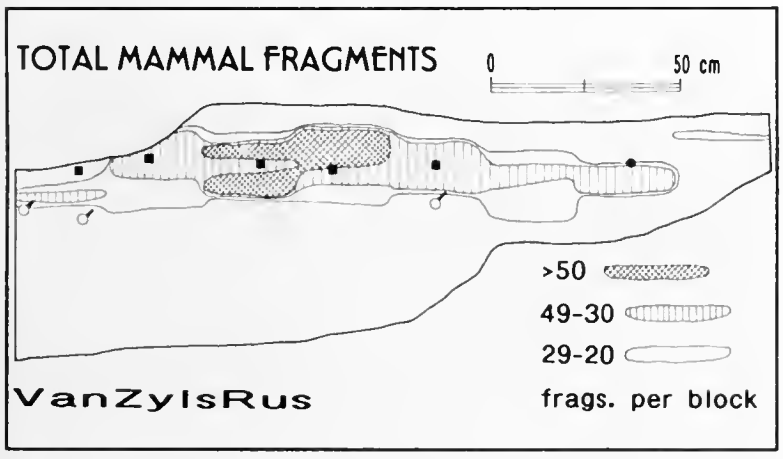

Fig. 9. Van Zyls Rus composite sections of all 12 slices through the fill. Rear shelter wall is to the right. Key to marker items in Fig. 4.

Boundary Shelter

Small patches of high density fauna rest on the Lower Holocene deposits but the patches are capped by the deepest sherds and could be preceramic in age (Fig. 10). Until associated charcoal dates are obtained it remains uncertain whether they represent the ca 1100 BP. midden seen at Haaskraal. In spite of the paucity of fauna and the highly compressed sequence between the two marker horizons, there is a well defined separation between the

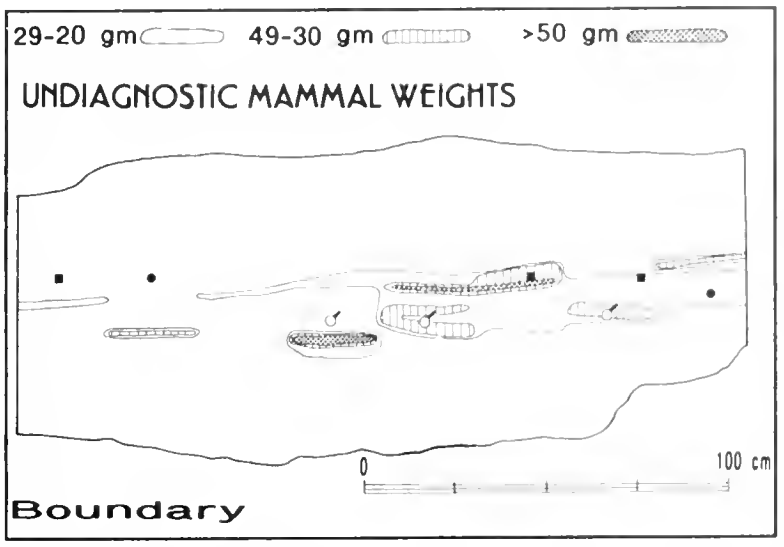

Fig. 10. Boundary composite section of twelve slices through main part of the fill. Rear shelter wall is to the right. Key to marker items in Fig. 4.

small, patchy lower midden and the more extensive upper midden.

Driekoppen Shelter

Very low faunal densities and poor records (the faunal contents from blocks in the same spit and square were combined) make this site difficult to present. Even though block values must be averaged, the analysis indicates that Driekoppen is unlike any of the others (Fig. 11). Only one concentration is evident between the two marker horizons, and the densest layer is near the surface in the post-Contact horizon.

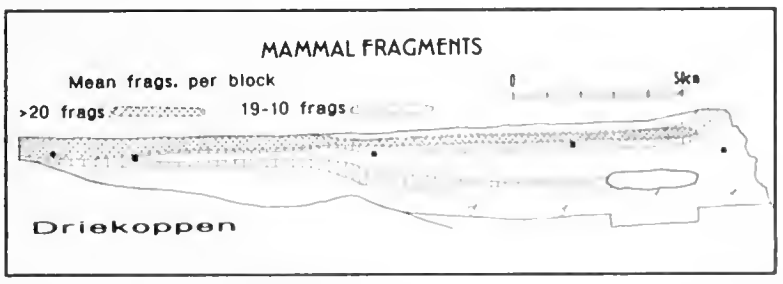

Fig. 11. Driekoppen composite section of four slices through central part of the fill. Rear shelter wall is to the right. Key to marker items in Fig. 4.

Bloubos Overhang.

Only ca 100 m along the same slope as Driekoppen, the Bloubos sequence conforms not with its large neighbour but with the rest of the shelters in the upper valley. Although only a 1 x 1 m test pit (Fig. 12), the

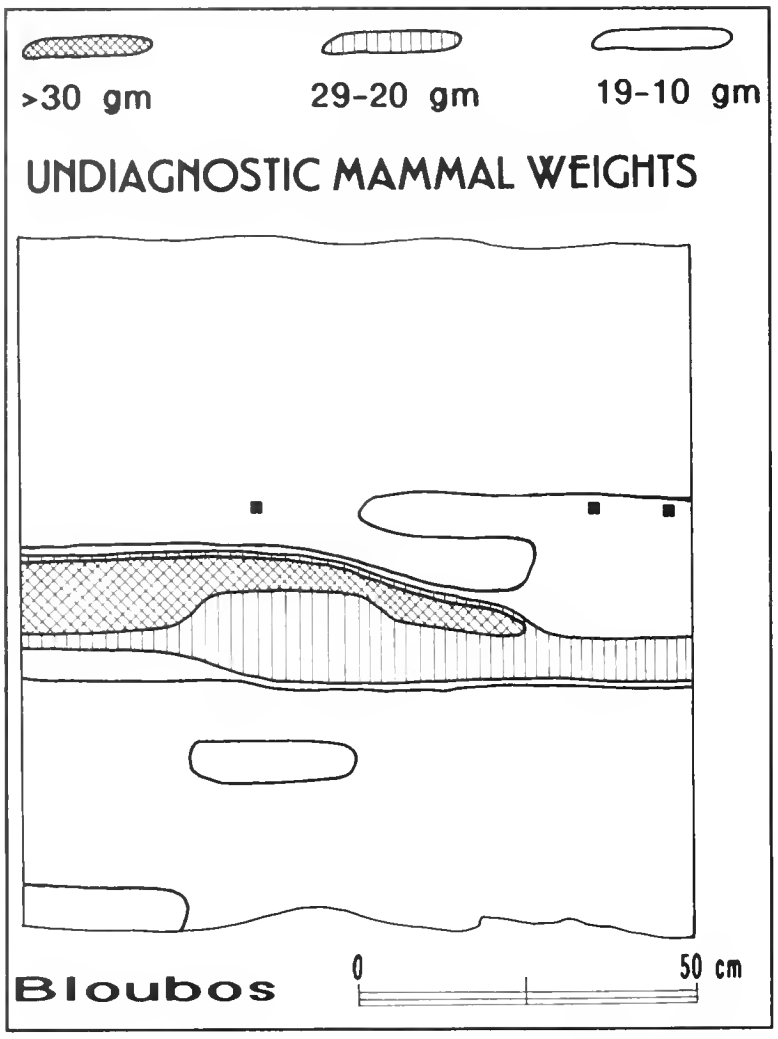

Fig. 12. Bloubos composite section of four slices. Key to marker items in Fig. 4.

results show a high-density patch on bedrock. It is followed by a second patch, followed by a low density zone then a very dense midden underneath the deepest European marker horizon. Although the sample is too small to allow us to see the deepest ceramic marker horizon, lithic analyses show beyond reasonable doubt (Pease 1993) that this is the same sequence seen elsewhere.

DISCUSSION

The first question to be settled is the accumulating agent responsible for these middens. The frequency of punctate tooth marks and porcupine gnawing is so small (Plug 1993) that the contribution of scavenging animals may be safely dismissed as trivial (Plug & Sampson in prep). By contrast the large samples of hornfels artifacts (Pease 1993), ceramics (Sampson *et al.* 1989), ostrich egg shell fragments (Sampson in press), and charcoal hearths directly associated with the bone accumulations can leave no room for doubt that they are mainly human discard. No attempt is made here to exclude the the small sample damaged by carnivores or porcupines from the analysis.

The next question is not so easily settled, namely the anomalous Driekoppen sequence. This may be connected to several other differences already noted at the site (van der Merwe 1990; Crass & Sampson 1993b) which hint that it may have been a major ritual centre. If, as suggested, its floor was a platform frequently used for trance dancing during post-Contact times, then aeolian lagging (the site is fully exposed to prevailing northwesterlies) and fragmentation underfoot may have combined to cause the post-Contact accumulation. The unprotected aspect of this site and its porous doleritic fill probably account for the paucity of older fauna.

The case for accelerating rates of mammal bone accumulation in all other shelters over a period centered on ca 400 BP is well supported. Implied in this statement is the untested assumption that rates of sediment deposition and roof fall remained constant before, during and after the midden forming event. It also assumes that the rate of sediment removal by wind scouring remained constant over the same period. Competing hypotheses are that bone accumulation rates remained constant while pseudo-middens formed because of lowered sedimentation rates and/or wind lagging of fauna. Independent cross-checks are needed from other sources to refute the rival hypotheses.

Although some 700 km to the southwest of the upper Seacow (Fig. 1 inset), the outstanding speleothem record from Cango Caves (Talma & Vogel 1992) is of particular value. The later part of their radiocarbon dated $\delta^{18}O$ record suggests relatively brief warmer episodes centered on ca 1150 BP, 850 BP, 450 BP and 50 BP (Fig. 13) with intervening colder episodes, particularly those centered on ca 1350 BP and 750 BP. Although the temperature fluctuations are relatively small, they reflect changes in deep cavern air temperature, several km from the cave system entrance. This implies a far wider range of ground surface changes. It would seem, on the basis of available evidence, that bone accumulations rates in the Upper Seacow River Valley shelters accelerated during warmer episodes. However, such episodes could promote slower roof spalling without any increase in carrying capacity. Spalling is very marked in the levels of the lower middens, but not in the upper ones, so other lines of evidence should be considered.

The radiocarbon dated pollen sequences from hyrax dung latrines at Oppermanskop and Meerkat shelter on the east rim of the upper Seacow (Fig. 1) are also useful as an independent check on potential processes that cause the middens to form. The ratio of grass to Karoo scrub pollen in hyrax dung appears to be a reflection of the local rainfall regime (Hubbard & Sampson 1993). The pollen diagrams from both sites show complementary fluctuations in grass and scrub pollen (Scott & Bousman 1990) over the last 1300 years or so. The Oppermanskop sequence gives adequate coverage for the earlier half of the sequence, but sampling intervals are too broad in the upper part of the compressed dung to be of much use. However the later portion is covered in excellent detail by the Meerkat latrine which overlaps with the top of Oppermanskop. Bousman (1990) has derived mean annual rainfall estimates from these data, based on comparisons between modern grass/Composite ratios from different parts of the Karoo. His reconstructed rainfall estimates are plotted in Figure 14, together with a summary curve of the Cango Cave temperature estimates.

The warm episodes centered on 1150 BP, 850 BP and especially 400 BP. appear to coincide with increases in

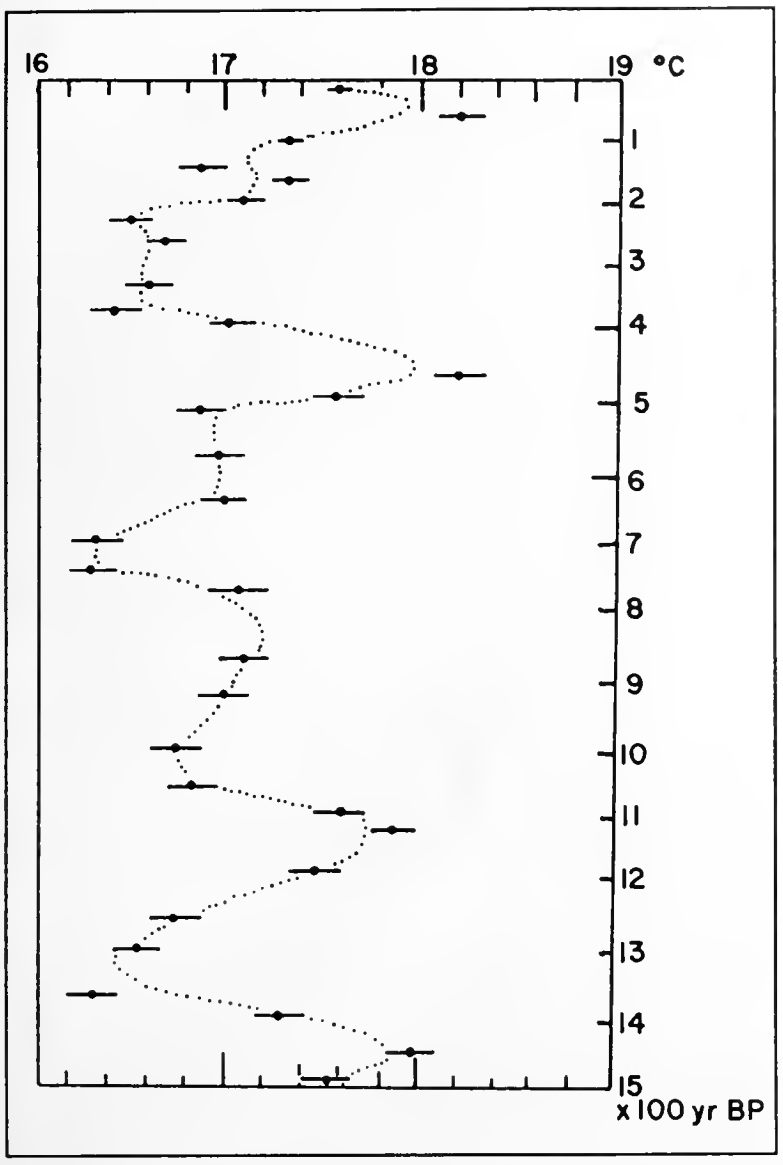

Fig. 13. Temperature estimates based on Cango Caves speleothem $\delta^{18}O$ data for the last 1500 years, after Talma and Vogel (1992:208).

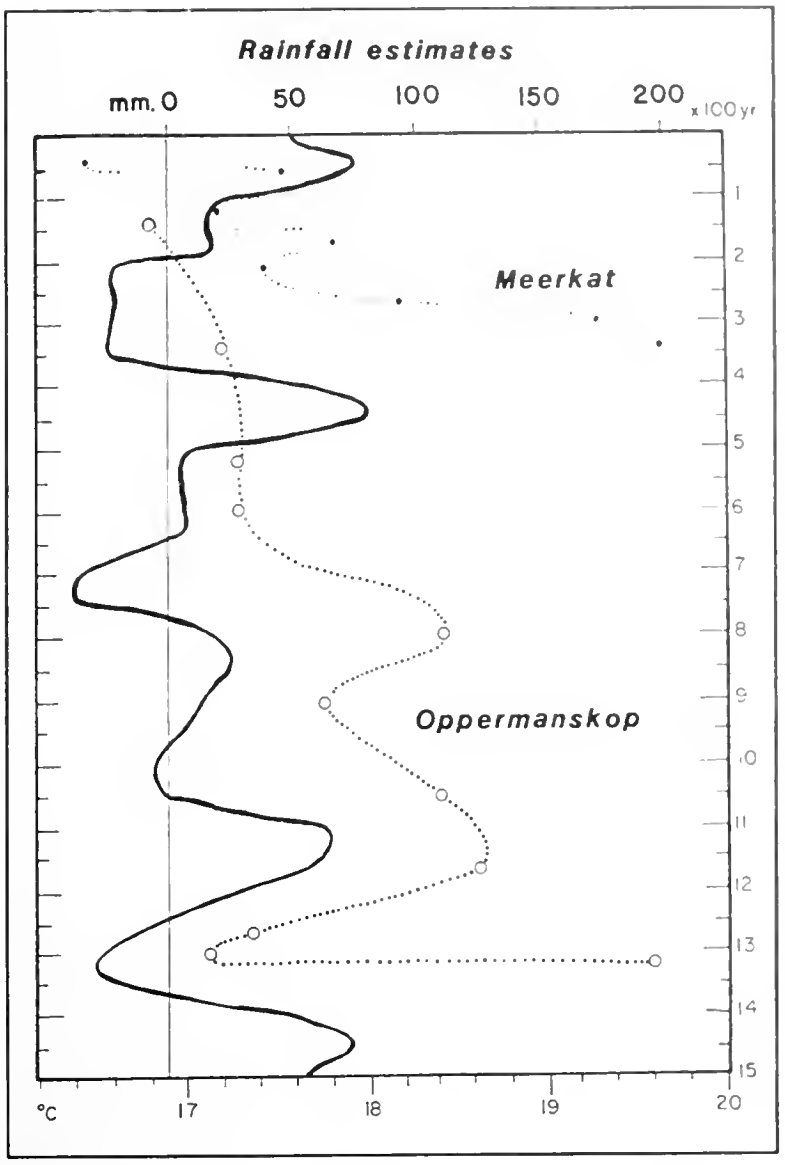

Fig. 14. Cango Caves temperature estimates (solid line) compared with rainfall estimates of Bousman (1990) derived from pollen diagrams at Oppermanskop and Meerkat hyrax latrines (see Fig. 1).

effective moisture, as reflected by increases in grass pollen output. Both the timing and the scale of these events suggest a link between climate, grass cover and bone midden accumulation.

The very marked decline in grass pollen output after ca 100 BP breaks the formerly cyclic association. This is reasonably interpreted as a reflection of the overgrazing by European stock farmers after ca AD 1850, rather than an extreme decline in rainfall. By this time most bone midden accumulation had already ceased abruptly after the systematic game slaughter by Europeans, briefly reviewed by Skead (1987), was under way. In shelters where game remains continued to accumulate rapidly in the post-Contact levels, there are also signs that the occupants possessed muskets (Westbury and Sampson 1993), suggesting that they too had joined in the general extermination.

In other shelters, there are hints that the decline in bone accumulation may have begun some time before the European arrival, but it is impossible to be more precise about dating. The rapid increase in ostrich egg intake by the surviving Bushmen during this period (Sampson 1993) also seems to have begun before the appearance of the first European livestock and artifacts. Precise timing again eludes us.

CONCLUSIONS

Driekoppen aside, a shadowy case can be made for two periods centered roughly on ca 1100 BP and ca 800 BP when the rate of mammal bone accumulation increased in upper Seacow valley shelters used by forebears of the Bushmen. A strongly supported case exists for a very marked increase in bone accumulation in all shelters for a period centered on ca 400 BP. Accumulations rates decline sharply at about the time of European Contact, with hints in some shelters that the decline started slightly earlier. There is a reasonably good fit, both in timing and scale, between these results and the temperature estimates from the Cango Cave speleothems and between both data sets and the rainfall estimates from Oppermanskop and Meerkat pollen diagrams. Bone middens formed during warm-wet episodes and stopped accumulating during cool-dry episodes. The European onslaught disrupted the whole pattern of associations by killing off the game and overgrazing the veld.

These results lend support to a simple climate-driven model in which carrying capacity fluctuates in response to modest, medium-range changes in rainfall and temperature. When carrying capacity reaches a critical

level, the frequency of game animals taken by ancestral Bushmen hunters also increases. When they decline, so the frequency of kills decline. The model lends itself to further testing along several avenues of archaeological, archaeozoological and isotopic enquiry.

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EARLY RECORDS OF SOME FLORA AND FAUNA USED BY THE KHOISAN OF THE WESTERN CAPE*

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ABSTRACT

A rare document in the the South African Museum provides eyewitness information on the use of a number of species of flora and fauna by the Khoikhoi and San inhabitants of the western part of South Africa during the late seventeenth century. The information provided relates to the use of the various species for food, medicine and equipment, and is supplemented by information from two eighteenth-century botanists as well as modern information.

INTRODUCTION

The library of the South African Museum has a document that is extremely rare and, in some respects, unique. It is generally known as the *Codex Witsenii* or Witsen's Codex. However, use of the name for this volume alone is not strictly correct, since it is but one of a set of three volumes to which the name was given (Burman 1738:vi *et seq.*). It is a bound collection of 87 coloured drawings, all but one of which relate to the expedition undertaken in 1685-6 by Simon van der Stel, Commander of the Dutch East India Company's (VOC) settlement on the shore of Table Bay. The purpose of the expedition was to locate the 'Copper Mountains' in the country of the Namaqua, which were said to be the source of all the copper possessed by the indigenous inhabitants of the land (Moodie 1960:398).

As well as a journal being kept of the expedition, drawings were made of some of the flora and fauna encountered along the route. They are considered to be the work of Heinrich (Hendrik) Claudius, an apothecary and artist who was a member of Van der Stel's expedition. Because of his professional interest, Claudius annotated them with information about their pharmacological and/or dietary properties, this probably having been obtained from the Khoikhoi; and he also included many of the indigenous names.

The original of the journal and its accompanying drawings disappeared from the VOC's archives, possibly towards the end of the seventeenth century, but are believed to be those now in the library of Trinity College, Dublin. These have been published in two editions (Waterhouse 1932; De Wet & Pheiffer 1979). The illustrations in the South African Museum's volume were made at the Cape in 1692 for Nicolaas Witsen, a wealthy citizen of Amsterdam who was one of the Directors of the VOC and a Trustee of the *Hortus Medicus* in Amsterdam, in which plants from all over the known world were cultivated. What is known of the history of this volume and the other collections of similar drawings has been detailed elsewhere (Waterhouse 1932; Barnard 1947; Kennedy 1967; De Wet & Pheiffer 1979; Wilson 1989; Kerkham 1992a, 1992b). Each of the collections differs in the number and nature of the drawings it contains, and the annotations of many of them differ, so that each is in some respects unique. Apart from the Dublin drawings, the identity of the artists who made the other collections is unknown, but the source of all of them is clearly the Claudius originals, not all of which are in the Dublin collection.

As far as is known, no publication relating to these collections has dealt with the ethnographic data. This information can be useful to archaeologists, who may find in their excavations the remains of the species discussed below or, where these have not survived, can use the information to expand their knowledge of the economy of the Khoisan. In this connection it should be borne in mind that, although the species described were found in the western part of the country, many of them have a wider distribution, and that similar species of the same genera were probably used in other parts of the country.

The use or vernacular name of many of the species is ascribed to the Khoikhoi: the Grigriqua, who lived between the Berg and Olifants Rivers; and/or the (Little) Namaqua, whose territory lay between the Olifants and Orange Rivers. The Sunqua (San) referred to in folio 148 were widely distributed and the 'Cape people' also mentioned there were probably the Goringhaiqua, the 'Kaapmans' of the early records, and possibly their

neighbours, the Gorachouqua and Cochoqua.

The expedition took place between 25 August 1685 and 26 January 1686. All the species recorded were thus observed between early spring and midsummer. A single plant (folio 70, not discussed here), was recorded as having been found by Van der Stel on 30 January 1686 on the Steenberg, on the False Bay side of the Cape Peninsula.

The descriptions below are preceded by the folio number of the illustration in the Museum's volume and information is provided from the annotation on the reverse of the drawing. These are followed by the identification of the species and such other information as is available. The information extracted from Watt & Breyer-Brandwijk (1962) is mostly derived from other, primary, sources but these authors are cited here as being the source. Since not all of the illustrations are reproduced here (Fig. 1), cross-references to those in the collection of Trinity College, Dublin (Waterhouse 1932, De Wet & Pheiffer 1979), the catalogue of paintings in the Africana Museum, Johannesburg (Kennedy 1967) and the collection of the South African Library, Cape Town (Kerkham 1992a, 1992b) are provided for the benefit of readers who have access to these publications. TCD followed by a number refers to the folio in Waterhouse and De Wet & Pheiffer, K plus number to the catalogue reference in Kennedy, and SAL plus letter and number to the South African Library collection. In cases where the indigenous name given in the other collections differs from that in the Museum's volume, the variant is given in brackets after the collection reference. A complete (black-and-white) set of the illustrations in the Museum's volume is to be found in Barnard (1947).

FLORA

9. The root of this plant has a pleasant taste, is carminative [relieves flatulence] and diuretic [causes an increased output of urine] and much used by the inhabitants, who call it *chamare*. The leaves have the smell of parsley.

   Possibly *Peucedanum gummiferum* (L.) Wijnands (Apiaceae) showing tuber and basal leaves. About a century later, Thunberg (Forbes ed. 1986:202) recorded that the root of a similar plant, called *gli* by the inhabitants, was dried and powdered, then mixed with cold water and honey and allowed to ferment overnight, after which it produced an intoxicating liquor. Watt & Breyer-Brandwijk (1962:1038, 1041) cited a report that *Glia gummifera* was used in South Africa as a diuretic in treating dropsy and lithiasis (kidney- and gallstones), and another of the medicinal use of *P. tenuifolium*, which apparently blisters the skin. The last two scientific names have been revised to *Peucedanum gummiferum* (Gibbs Russell *et al.* 1987:139-140). Note that the indigenous name has been used for the genus name of the plant illustrated in folio 63. Common names: gli(wortel); moerwortel, yeast root, the latter indicating the use of the root as a yeast or fermenting agent (Smith 1966:230). TCD811, K637, SALB28.

13. This plant is filled with brack, sourish sap that is useful - in direst necessity - for slaking thirst, but its use results in severe stomach-ache. It grows mostly in the country of the Namaqua.

   Conophytum sp., probably *C. minutum* (Haw.) N.E. Br. (Mesembryanthemaceae). Watt & Breyer-Brandwijk (1962:6) reported that Louis Leipoldt, poet, writer and medical doctor, considered that this genus has narcotic properties. Common name: not known for this species. K644.

15. This is the second kind of the *gambry* of the Hottentots, but unfit to use. (See 55 below for the first kind.)

   Ornithogalum suavolens Jacq. (Liliaceae). Common names: geeltjienkerintjie, yellow chincherinchee (Smith 1966:225); also geelviooltjie, yellow violet (Bond & Goldblatt 1984:55). K638.

19. The flower of this plant has a pleasant smell and it [the plant rather than just the flower] is calefacient [produces or causes a sensation of warmth] and suitable for poultices. Called *cabaroe* by the inhabitants.

   Steirodiscus tagetes (L.) Schltr. (Asteraceae). Common name: Smith (1966:184, 263) gave only cabaroe and kaberoe, names derived from the annotations. K614.

27. This plant has an edible root and is called *heyntame*.

   Pelargonium barklyi Scott Elliott (Geraniaceae). Watt & Breyer-Brandwijk (1962:453) reported the use of a number of *Pelargonium* species in the treatment of various diseases and Thunberg (Forbes ed. 1986:160). and dysentery. Common name: not known for this species, but the name malva, mallow, is generally applied to the genus (Smith 1966:331). K601. observed that the tubers, being of an astringent nature, were used in the treatment of diarrhoea

37. The roasted bulb of this plant has a sweet and pleasant taste and is a common food of the inhabitants, but eating much of it causes severe constipation.

   Babiana tubulosa (Burm. f.) Ker-Gawl. (Iridaceae). Common names: bobbejaantjie, little baboon, or bobbejaanuintjie, baboon's little onion (Smith 1966:133, 135). TCD835, K628, SALB4.

43. The bulb of this sweet-scented flower has a p leasant if somewhat astringent taste. It is a common food of the inhabitants and they call it *cabung*.

   Lapeirousia pyramidalis (Lam.) Goldblatt (Iridaceae). Common name: Bond & Goldblatt (1984:77) gave this as naeltjie, clove, and applied

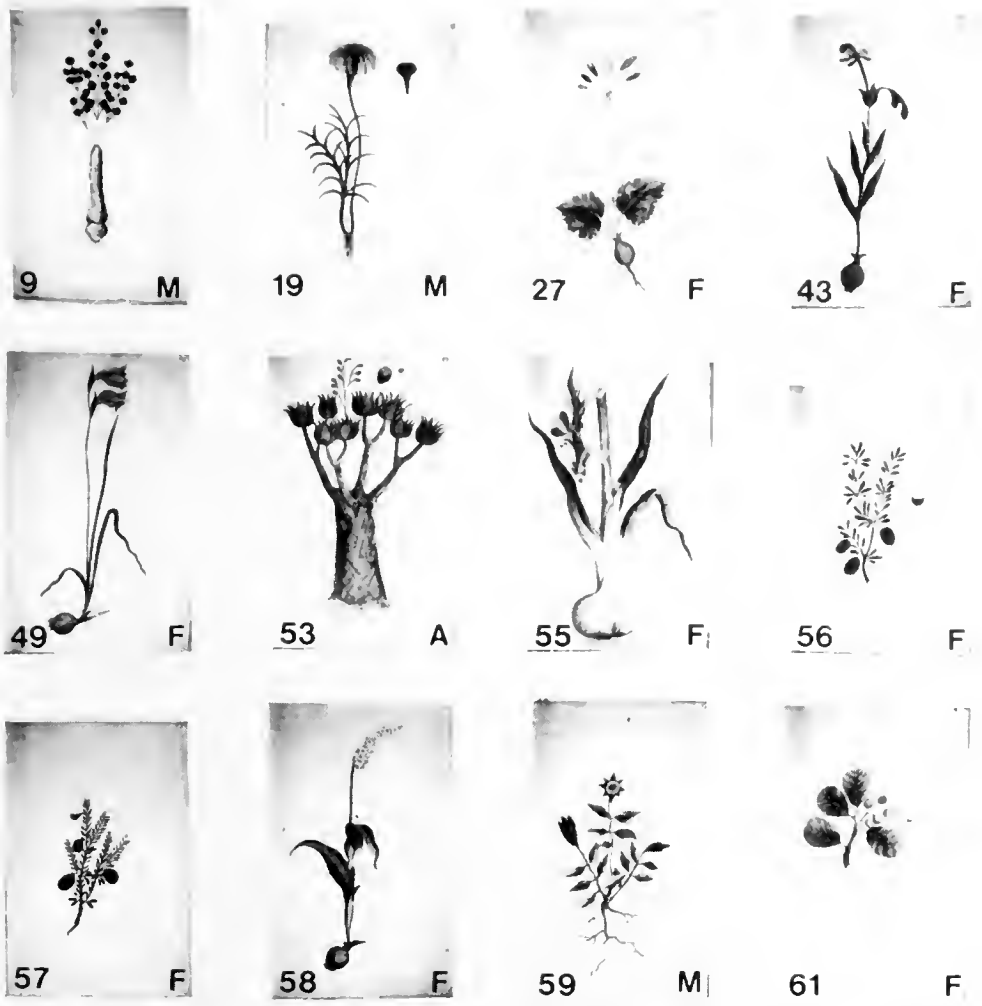

Fig. 1. Twenty-four of the flora and fauna discussed. The number in the lower left corner is that of the folio. The letter in the lower right corner indicates the use of the species for food (F), medicine (M) or artifacts (A).

the names *cabong* and *chabi* to *L. fabricii*, whereas Smith (1966:184, 190) applied them to *L. anceps*. TCD785 (*Chabi*), K627 (*Chabung*), SALB35.

49. The root is edible.
Gladiolus caryophyllaceus (Burm. f.) Poir. (Iridaceae). Common names: sandlelie, sand lily; pink afrikaner (Bond & Goldblatt 1984:69). TCD801, K608, SALB17.

53. The spongy pith of the branches of this tree is removed and the hollowed-out bark used by the inhabitants for quivers, a piece of leather being drawn over one end. Called *choje* by the inhabitants.
Aloe dichotoma Masson (Liliaceae). Common names: the use to which the branches were put has given rise to the Afrikaans and English vernacular names kokerboom and quiver tree (Coates Palgrave 1977:78). TCD799, K595, SALB23.

55. The stem of this plant is filled with sweetish sap and is chewed by the inhabitants when they are thirsty, as it has a wonderful ability to cool and freshen the mouth. The inhabitants call it *gambry*.
Albuca altissima Dryander (Liliaceae). Note that this differs from 15 above although it has the same Khoikhoi name. Thunberg (Forbes ed. 1986:57) also recorded the use of another species, *A. maior* (= *A. canadensis*: Gibbs Russell et al. 1985:101) as a thirst-quencher. Common names: Smith (1966:538) gave maerman, thin man, as the common name for this plant, but under this heading (p. 328) applied it to *Urginea altissima* (L.f.) Bok. Elsewhere (pp. 218, 424), he applied the indigenous name, *gambry*, to *A. canadensis*, which is also known as slymstok, slime-stick, with reference to the qualities mentioned above. Le Roux & Schelpe (1981:30) gave the common names of *A. altissima* as slymstok and kamiemie, the latter evidently of Khoisan origin. TCD849, K625, SALB14.

56. The fruit of this plant looks and tastes like the Indian fruit kauki [persimmon], but is constipating and eating too much of it obstructs the bowels. It is called *kannobe* by the inhabitants.
Diospyros austro-africana De Winter (Ebenaceae). Watt & Breyer-Brandwijk (1962:393) cited a report that the Nama used Royena hirsuta [= *D. austro-africana*: Gibbs Russell et al. 1987:149] as a purgative, which is contradictory of the effects mentioned above. Common names: fire-sticks, kritikom, the former referring to use of twigs to make fire by friction, the latter probably a Khoisan name (Coates Palgrave 1977:744). See also 83 below. TCD833, K618, SALB31.

57. The fruit of this plant has a pleasant, if some what tart, taste. Healthy and cooling, it is useful for travellers to freshen their mouths and quench their thirst. Called *cargoe* by the inhabitants.
Nylandtia spinosa (L.) Dumort. (Polygalaceae). Folio 31 illustrates this species with flowers but without fruit. Common names: bokbessie, goat berry; skilpadbessie, tortoise berry; duinebessie, dune berry (Bond & Goldblatt 1984:361). TCD865, K619, SALB19.

58. The bulb from which this flower grows has a sweet and pleasant taste when baked in the ashes. The inhabitants call it *chaby*, and it serves them as a common food.
Wurmbea spicata (Burm. f.) Dur. & Schinz (Liliaceae). Common names: swartkoppie, little blackhead; peper-en-soutblommetjie, pepper-and-salt flower (Smith 1966:366), the latter apparently in allusion to the flower colour. TCD839, K624, SALB1.

59. This is *kanna*, renowned among the Namaqua and other peoples in the area on account of its intoxicant properties. It is chewed daily by the people and has a pleasant and cordial taste. It grows only on certain mountains in Namaqualand and is collected in October.
Sceletium sp., probably *S. regium* L. Bol. (Mesembryanthemaceae). Thunberg (Forbes ed. 1986:248) described how a shrub, called *kon* by the Hottentots and *canna* by the colonists (sic), was famous all over the country and was traded over great distances. The root, stalk, and leaves were pounded, then twisted like 'pig-tail tobacco', allowed to ferment and then kept as a thirst-quencher, although if chewed immediately after fermentation, it intoxicated. Common name: not known for this species, but kanna and kougoed, chewing matter, have been applied to other species (Smith 1966:276, 309). TCD787, K631, SALB27.

61. The berries of this plant are edible to some extent but are not healthy, especially if too many of them are eaten and water drunk thereafter, since this causes acute stomach-ache. The plant is found in many places and is called *chou* by the inhabitants.
Heeria argentea (Thunb.) Meisn. (Anacardiaceae). Common name: kliphout, rockwood (Bond & Goldblatt 1984:138). TCD819 (thou), K620, SALB30.

62. This plant, found in certain valleys along the Piketberg, has a sweet and edible root.
Anomatheca viridis (Aiton) Goldblatt (Iridaceae). Common name: groenagretjie, green mayflower (Bond & Goldblatt 1984:59). K623.

63. The root of this plant, like a type of carrot, has a pleasant smell and is an effective carminative. It grows in dry, sandy places in the country of the Grigriqua.
Possibly *Chamarea capensis* (Thunb.) Ecklon &

Zeyher (Apiaceae). Watt & Breyer-Brandwijk (1962:1036) cited a report that this plant was heated and applied externally to relieve pain; also that it was not used internally as a medicine but eaten as a food, and that the root is soapy. Note that the indigenous name for the plant illustrated in folio 9 has now become the genus name of the plant illustrated here. Common names: Cape caraway; finkelwortel, fennel root (Bond & Goldblatt 1984:142). K605.

64. The root of this plant is sweet and much eaten by the inhabitants. It is found in many places and is called *heyntame* by the Namaqua, *aree* by the Grigriqua.

Pelargonium incrassatum (Andr.) Sims (Geraniaceae). Van der Walt & Vorster (1981:79-80) reported that this species is restricted to a narrow strip along the western Cape coast, from the Spektakel Pass west of Springbok to the Nardouw Flats east of Klawer. The wide distribution mentioned by the annotator may refer to tuberous *Pelargonium* spp. in general, rather than indicating that the distribution of *P. incrassatum* is now more restricted than in the past. It is leafless, thus invisible, during the summer. Common names: Namaqualand Beauty (Van der Walt & Vorster 1981:79-80); t'neitjie (Le Roux & Schelpe 1981:98), probably a Khoisan name. TCD869, K602, SALB25.

67. This shrub has a sweet smell and is useful for making poultices in the event of cramps.

Othonna leptodactyla Harv. (Asteraceae). Common name: not known for this species. K641.

69. The root or bulb of this plant, which is called *haro* by the inhabitants, has a sweet and pleasant taste.

Moraea fugax (Delaroche) Jacq. (Iridaceae). Watt & Breyer-Brandwijk (1962:510) reported that the taste is like that of a boiled chestnut, but Thunberg (Forbes 1986:55) thought they tasted like potatoes. Common name: uintjie, little onion, a name given to a wide range of plants with bulbs, corms or tubers, particularly species of Iridaceae and Cyperaceae (Smith 1966:473). TCD797, K610, SALB36.

74. The root of this plant has a sweet and pleasant, though watery, taste and can provide the inhabitants with a daily food. It grows in some places in the country of the Namaqua, who call it *berroe*.

Cyphia digitata (Thunb.) Willd. (Lobeliaceae). See also below for a different species illustrated by Burman. Thunberg (Forbes ed. 1986:251) stated that a plant called *kameka* or *barup*, 'which is said to be a large and watery root', was one of several means employed by the Hottentots when traversing the Karoo 'not only to assuage their hunger, but more particularly to quench their thirst'. Common name: baroe or variant spellings, often with a prefix such as berg-, mountain, melk-, milk, etc. (Smith 1966:616). TCD831, K652.

76. The root and stem of this plant, roasted in the fire, are pleasant to eat. It was found in many places in the country of the Namaqua, who eat it as a common food all year round and call it *thumma*.

Pelargonium carnosum (L.) L'Hérit. (Geraniaceae). Common name: fleshy-stalked pelargonium (Van der Walt 1977:8), simply a translation of the scientific name. TCD793, K653, SALB16.

78. This plant is found in many places, but particularly between the Olifants and Doornbosch [= Groen] rivers. The inhabitants hold it in great esteem and eat it as a diuretic. The Namaqua call it *camarebi* and the Grigriqua *camao*.

Fockea edulis (Thunb.) K. Schum. (Asclepiadaceae). Watt & Breyer-Brandwijk (1962:133) cited a nineteenth-century report that the tuber was eaten raw by the Hottentots. Thunberg (Forbes ed. 1986:250, 274) stated that this was one of several plants used by the Hottentots as a source of food and water; also that they ground it to meal and baked it like bread. Common name: kamb(a)roo (Smith 1966:272). Thunberg (*loc. cit.*) gave the common names *ku* and *Kou*, the latter called 'a Hottentot watermelon'. These names are either corruptions or dialectal variants of the Khoikhoi names given in the Dutch annotation. TCD825, K622, SALB12.

79. An edible gladiolus.

Gladiolus equitans Thunb. (Iridaceae). Common name: kalkoentjie, little turkey. This name is applied to several species of Iridaceae and alludes to the colour of the flowers (Smith 1966:270-271). TCD829, K609.

80. This plant grows in the vicinity of Meerhoffkasteel and is used successfully by the inhabitants as a purgative. It is called *quaroebe* by the Namaqua and Grigriqua.

Veltheimia capensis (L.) DC. (Liliaceae). Common name: sandlelie, sand lily (Le Roux & Schelpe 1981:28). TCD789, K612, SALB22.

81. The brittle and soft stem of this geranium has a sweet and pleasant taste. The inhabitants eat it, and call it *cabouti*. It was found between Oloffberghsfontein and the Dassenberg [= Heerenlogement].

Pelargonium echinatum Curtis (Geraniaceae). Common names: bobbejaan t'neitjie (Le Roux & Schelpe 1981:96), the latter part probably a Khoisan name applied to *Pelargonium* spp. in general - see folio 64; also prickly-stemmed pelargonium (Van der Walt 1977:13). TCD827, K600, SALB15.

82. This unusual plant is found in the vicinity of the Copper Mountains. The inhabitants call it *tkauby* and use its sap as an adhesive, with which to glue together their arrows and quivers.

Euphorbia stellispina Haw. (Euphorbiaceae). Common name: noorsdoring, ill-tempered thorn, referring to the spiny nature of the stems of several species of *Euphorbia* (Smith 1966:352). TCD851, K607, SALB7. See Wilson (1992) for comment on previous incorrect translations of the annotation.

83. The fruit of this plant are pleasant to eat, although exceedingly astringent. They are called *Baviaens kerse* [baboons' cherries] by the Dutch.

Probably *Diospyros acocksii* (De Winter) De Winter (Ebenaceae). Common name: Namakwajakkalsbessie, Namaqua jackal-berry (Coates Palgrave 1977:743). TCD847, K645, SALB8.

FAUNA

142 (upper). This kind of wild rabbit is found in the vicinity of the Copper Mountains. It has a pleasant taste and is called nabasse by the inhabitants. Smith's red rock rabbit *Pronolagus rupestris* (Leporidae), a nocturnal species (Skinner & Smithers 1990:176-7). TCD735, K665, SAL Z2.

142 (lower). This caterpillar, after the contents of its gut have been squeezed out, is put on wooden skewers and roasted on the coals, or it is cooked without water in a pot, after which the liquid is squeezed out and the remainder made into balls and eaten. It is considered a particular delicacy by the Namaqua, who call it *aroebe*. (The annotation also mentions that the people customarily ate red and green grasshoppers.)

Larva of the willowtree (or zig-zag) emperor moth *Gonimbrasia tyrrhea* (Saturniidae). In the winter-rainfall region, the larva appears in late spring or early summer and is available for about two months before it pupates (V.B. Whitehead pers. comm. 1993). Cross-references as above. A better-known relative, the 'mopane worm', is the larva of *G. belina* (Pinhey 1972:79).

148. This snake is eaten with great relish by the Sunqua, who call it *keykaras*, while the Cape people call it *cabcou*.

Mole snake *Pseudaspis cana* (Colubridae). TCD773, K671. Folio 146 (upper) illustrates what appears to be a juvenile of this species, but it is called *thoumquete* by the Namaqua and *eyterimate* by the Grigriqua, both tribes considering it vicious and poisonous. *P. cana* is not venomous, but can inflict a serious bite. TCD775, K670 (centre).

156. The venom of these snakes, which the inhabitants call *hamacho*u, is used by them to poison the tips of their arrows and spears after it has been dried and sliced into pieces. (The illustration shows how the venom sac is removed and its end tied off, this also being described in the annotation.)

Cape cobra *Naja nivea* (Elapidae). TCD777, K672 (right).

THE [*DECADES*] *RARIORUM AFRICANARUM PLANTARUM*

Johannes Burman (1707-1779), a medical doctor and Professor of Botany at the Hortus Medicus in Amsterdam, acquired the three volumes of the *Codex Witsenii* from the widowed daughter-in-law of his predecessor, Caspar Commelin, after the latter's death in 1731. He made extensive use of the Codex in his monograph on Cape flora (Burman 1738-9). Although he annotated the Museum's volume with references to his own work and that of other botanists, of the 92 references to the *Codex* in his monograph, only twelve refer to the Museum volume: folios 9, 13, 17, 19, 25, 27, 39 and 63-67.

As will be seen from the foregoing, not all the illustrations in the Museum's volume are of flora used by the Khoikhoi. There are, however, other references to such use in the *Decades,* information on these having been taken from the other two volumes of the *Codex Witsenii*, one of which is in the library of the National Botanical Institute, Pretoria, while the location of the third is not known, or from another source. Those given below list the number of the *Decas*, plate, figure, and page. Burman gave the *Codex Witsenii* as the source of his information for all the plants except the first.

3.25.1.61. Eaten by the inhabitants for their agreeable taste and commonly called *Ficus Hottentotorum* [Hottentots' fig].

Carpobrotus edulis (L.) L. Bol. (Mesembryanthemaceae). Common name: suurvy, sour fig (Bond & Goldblatt 1984:320).

3.27.3.67. The bulb is eaten by the Hottentots.

Oxalis purpurea L. (Oxalidaceae). Common name: not known for this species, but the name suring, sorrel, is applied to many species of this genus (Smith 1966:446).

4.38.2.99. The bulb is eaten by the Hottentots.

Cyphia bulbosa (L.) Berg. (Lobeliaceae). Common name: bergbaroe, mountain baroe (Bond & Goldblatt 1984:211). See folio 74 above for another species.

9.82.1.235-6. It is called the *Assagay-Boom* [-tree]... from which the Khoikhoi make sarissas or assegais. *Curtisia dentata* (Burm. f.) C.A. Sm. (Cornaceae).

9.83.1.237. Commonly called *Slangenhout* [snakewood]. Surgeons in the Cape of Good Hope use the root to evacuate serous fluids.

Olea exasperata Jacq. (Oleaceae). Possibly a use derived from the Khoikhoi. Smith (1966:422) said that the name derives from the belief that the root was an antidote for snake-bite (see also Coates Palgrave 1977:760).

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MTEMANKHOKWE: HUMAN SKELETAL REMAINS FROM A LATE IRON AGE CEMETERY IN THE MANGOCHI DISTRICT OF SOUTHERN MALAWI*

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ABSTRACT

Six human skeletons from a late Iron Age context in the Shire River Valley of southern Malawi have been analysed from a biological perspective. The age, sex and health status of each individual is presented. Population origin, evidence of social status and ethnicity, and health and diet, are discussed in the light of these data. The presence of intentional tooth mutilation in these individuals is the first demonstration of such a case from an archaeological context in Malawi.

INTRODUCTION

During 1987, Dr. Yusuf Juwayeyi and his colleagues at the Department of Antiquities of Malawi, excavated six human burials from a late Iron Age site in the Shire River Valley in southern Malawi (Fig. 1). The site appears to have been a cemetery built on the site of an earlier village. There are many parallels between this site and the one dug at Nkudzi Bay by Inskeep (1965), and pottery associated with the Mtemankhokwe burials is the same as that at Nkudzi Bay (Juwayeyi 1991).

Juwayeyi's analysis of the associated cultural material indicates a date for the cemetery site in the late eigthteenth or early nineteenth centuries. The importance of this date is that "the people buried at the Mtemankhokwe I site were the ancestors of the Nyanja speaking people" (Juwayeyi 1991:33). The movement of Yao-speaking and Ngoni-speaking peoples post-dates the burial phase of the Mtemankhokwe site.

In July 1991, upon the invitation of Dr. Juwayeyi, I had the opportunity to study the six skeletons housed at the Malawi Department of Antiquities in Lilongwe. The following report on the skeletal biology of the people is intended to parallel Juwayeyi's 1991 description of the cultural practices. Tables 1 to 4 present the measurement data for these individuals.

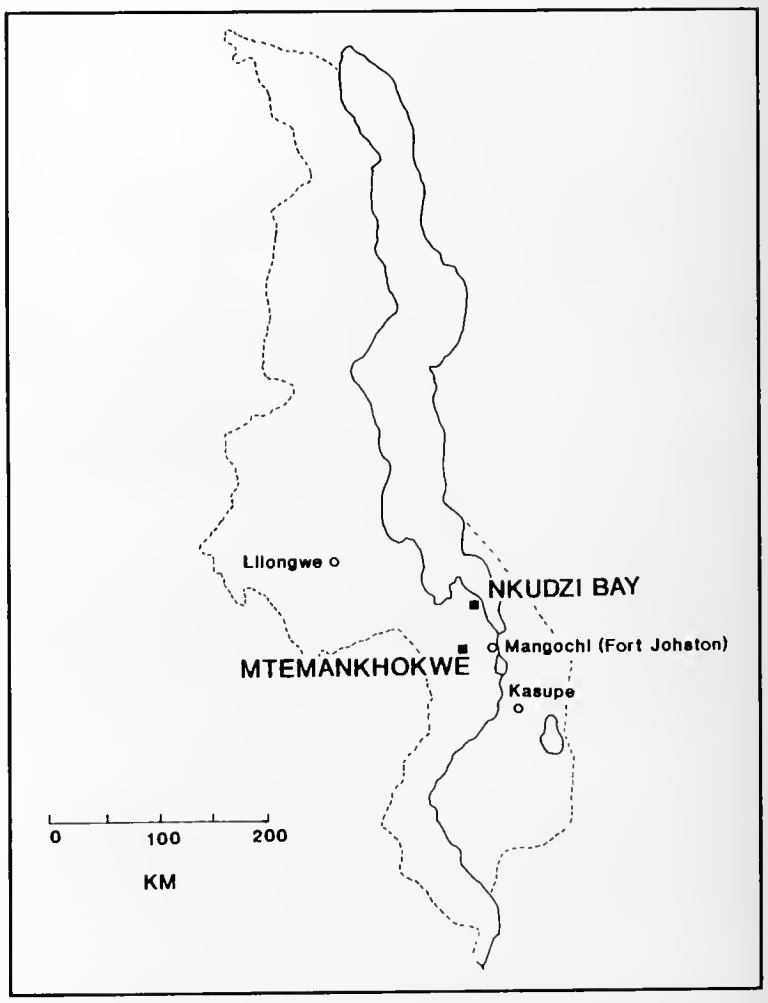

Fig. 1. Map of Malawi showing loction of Mtemankhokwe and Nkudzi Bay sites.

DESCRIPTION OF THE SKELETONS

Burial No. 1 (Fig. 2)

Burial number 1 demonstrates the poorest preservation of the six Mtemankhokwe individuals. Although both the face and vault can be reconstructed, crushing has resulted in substantial distortion and the two cranial sections cannot be assembled in an anatomically correct manner. The palate is also broken with several loose teeth that cannot be refitted into the damaged sockets. The mandible is in fairly good condition and shows some

Table 1. Cranial measurements (mm).

BURIAL NUMBER	1	2	3	5	6
SEX	M	F	M	M	F
Maximum Cranial Length (L)	-	188	181	190	178
Maximum Cranial Breadth (B)	133	130	119	131	127
Basibregmatic Height (H')	-	135	-	-	137
Bistephanic Breadth (STB)	110	117	101	115	109
Biasterionic Breadth (ASB)	113	101	98	113	93
Frontal Sagittal Arc (S_1)	-	133	126	138	121
Parietal Sagittal Arc (S_2)	123	135	127	141	131
Occipital Sagittal Arc (S_3)	115	120	105	106	105
Transverse Arc (Q)	-	315	291	307	296
Frontal Sagittal Chord (S_1')	-	109	109	118	107
Parietal Sagittal Chord (S_2')	112	118	115	123	117
Occipital Sagittal Chord (S_3')	92	102	93	91	90
Nasion-bregma Subtense (FRS)	-	32	25	29	26
Nasion Subtense Fraction (FRF)	-	44	55	62	48
Foramen Magnum Length (fml)	-	39	-	-	39
Foramen Magnum Breadth (fmb)	-	-	-	-	29
Mastoid Height (MDH)	24	25	34	29	27
Least Frontal Breadth (B')	-	100	-	103	85
Bizygomatic Breadth (J)	-	116	-	146	119
Bimaxillary Breadth (GB)	91	91	83	102	96
Upper Facial Height (G'H)	-	-	-	-	-
Total Facial Height (GH)	-	109	116	110	110
Nasion-Basion Length (LB)	-	104	-	-	102
Prosthion-Basion Length (BPL)	-	-	-	-	-
Bimaxillary Subtense (SSS)	-	18	25	18	23
Naso-frontal Subtense (NAS)	-	16	-	19	13
Inner Biorbital Breadth (M43.1)	95	93	-	100	88
Outer Biorbital Breadth (M43)	101	103	-	109	95
Bidacryonic Breadth (DC)	-	24	23	-	22
Bimaxillofrontal Breadth (IOW)	19	17	19	-	19
Orbital Breadth (O_1)	36	37	37	40	38
Orbital Height (O_2)	36	32	34	37	34
Nasal Height (NH)	46	47	48	46	48
Nasal Breadth (NB)	24	31	27	30	28
Least Nasal Breadth (SC)	6	9	7	-	7
Maxillo-alveolar Length (MAL)	-	-	56	-	-
Maxillo-alveolar Breadth (MAB)	-	63	60	-	64
Palatal Length (G'_1)	-	-	48	-	-
Palatal Breadth (G'_2)	-	36	37	-	40
Palatal Height (PAH)	-	10	13	-	14

Table 2. Cranial indices.

BURIAL NUMBER	1	2	3	5	6
SEX	M	F	M	M	F
Cranial (100 B/L)	-	69.1	65.7	68.9	71.3
Cranial Height (100 H'/L)	-	71.8	-	-	77.0
Frontal Chord/Arc (100 S_1'/S_1)	-	82.0	86.5	85.5	88.4
Parietal Chord/Arc (100 S_2'/S_2)	91.1	87.4	90.6	87.2	89.3
Occipital Chord/Arc (100 S_3'/S_3)	80.0	85.0	88.6	85.9	85.7
Foramen Magnum (100 fmb/fml)	-	-	-	-	74.4
Orbital (100 O_2/O_1)	100.0	86.5	91.9	92.5	89.5
Nasal (100 NB/NH)	52.2	66.0	56.3	65.2	58.3
Palatal (100 G'_2/G'_1)	-	-	77.1	-	-

Table 3. Mandibular measurements (mm) and indices.

BURIAL NUM8ER	1	2	3	4	5	6
SEX	M	F	M	F	M	F
Maximum Mandibular 8readth (w_1)	120	106	-	112	116	114
8icoronoidal 8readth (crcr)	95	91	91	91	85	93
Bigonial 8readth (gogo)	95	75	96	83	82	90
8imental 8readth (zz)	44	44	42	46	46	42
Proj. Rameal Height (rl)	68	49	-	48	62	46
Proj. Coronoidal Height (crh)	68	55	66	56	57	55
Proj. Corpus Length (cpl)	80	77	73	83	85	72
Proj. Mandibular Length (ml)	98	104	-	101	103	104
Length of Condyle (cyl)	24	20	-	17	22	23
8readth of Condyle (cyb)	10	9	-	8	9	10
Minimum width of Ramus (rb')	36	36	38	34	36	33
Molar-premolar chord (m_2p_1)	-	27	28	-	28	
Symphyseal Height (h_1)	35	-	36	-	35	31
Mandibular Angle (M)	101	116	-	125	106	123
Mandibular Index (100w_1/ml)	122.5	101.9	-	110.1	102.9	109.6
Rameal Index (100 rb'/rl)	52.9	73.5	-	70.8	58.1	71.7

pathologies. The post-cranials are fairly complete, but both humeri, the right tibia, both fibulae, and the left femur are broken and cannot be measured.

This individual is clearly male. The pelvis demonstrates a narrow sciatic notch and a narrow sub-pubic angle. That the individual was an adult is unquestioned, and the complete formation and fusion of the medial epiphysis to the shaft of the clavicle indicates an age in excess of 25 years. Although the face of the pubic symphysis has remodelled extensively, the remodelling is not as extensive as the oldest age category (McKern 1970). The sagittal and coronal sutures have begun to obliterate. No osteophytosis is present on the

Table 4. Long bone measurements (mm).

	Burial 1		Burial 2		Burial 3	
	lt	rt	lt	rt	lt	rt
Humerus						
Maximum Length	-	-	284	286	312	318
Epicondylar Breath	-	61	52	52	55	56
Midpoint Circumference	70	70	64	66	65	65
Radius						
Maximum Length	249	251	224	226	-	276
Ulna						
Maximum Length	271	272	243	248	-	296
Femur						
Maximum Length	-	419	-	-	-	-
Tibia						
Maximum Length	354	-	-	322	379	-
Mid-shaft (ant-post)	30	-	-	27	32	-
Mid-shaft (med-lat)	19	-	-	18	23	-

	Burial 4		Burial 5		Burial 6	
	lt	rt	lt	rt	lt	rt
Humerus						
Maximum Length	279	-	299	304	302	309
Epicondylar Breath	55	54	62	62	59	59
Midpoint Circumference	58	58	64	64	39	40
Radius						
Maximum Length	232	-	259	261	246	245
Ulna						
Maximum Length	255	-	280	280	274	273
Femur						
Maximum Length	-	-	-	-	-	-
Tibia						
Maximum Length	-	-	356	-	-	-
Mid-shaft (ant-post)	-	-	31	-	-	-
Mid-shaft (med-lat)	-	-	21	-	-	-

vertebral column, the ventral rib ends are cupped but not extensively, and the sternal corpus has not united to the manubrium. All these features indicate an age less than 40 years. The indication is therefore that Burial 1 represents a man who was probably in his 30's at death.

There are no obvious post-cranial abnormalities or pathologies, although slight arthritic lipping can be seen on the phalanges of the foot, particularly on the great toes. The bones of the right upper limb are longer than the left indicating that the individual was probably right handed.

The jaws of Burial 1 do demonstrate interesting features. The four upper incisors have been lost antemortem, but only the sockets of the central teeth have been completely resorbed. The sockets for the lateral incisors are still present although resorption is evident. The post-mortem breakage of the jaws means that many teeth have been lost after death. Other than the four upper incisors, the right lower P1 and M2 have been lost ante-mortem. The mandible also shows severe apical abscessing at the root of the right M1 and especially at the roots of the left premolars. The maxillary molars have marked buccal calculus, particularly on the right M2.

Burial No. 2 (Fig. 3)

This skeleton is in better condition than the previous individual. The cranium is nearly complete with some minimal damage to the base of the skull and to the back

Fig. 2. Facial and left lateral views of Burial 1.

of the palate. The mandible is complete and nearly all of the bones of the post-cranial set are present. Some vertebra, a few hand bones and most of the foot bones have been lost. The femora, tibia and fibulae have suffered regional damage and none are complete.

The morphology of the pelvis in general is not particularly indicative of the sex of this individual. Confirmation of sex comes only from the shape and structure of the pubic symphyseal face, which is feminine. Very faint parturition-like scarring can be seen on the dorsal edge of the pubis, and the presence of well defined pre-auricular sulci suggest that these are indeed parturition scars. The age of the individual at death is past 40 years. The rib ends are strongly cupped, calcification of the cartilage has begun on the ventral end of the 1st rib, and osteophytosis is present on thoracic vertebrae (T5 to T7) and at the lumbar 4/5 junction. The coronal suture has been obliterated and the sagittal is nearing fusion. The pubic symphyseal face is flattened with a strong rampart and fitting the 50's age category from the Suchey-Brooks pubis aging models (Suchey *et al.* 1988). All in all, these features would indicate a woman well past the 40 year mark, and probably in the sixth decade of her life.

There are few obvious abnormalities seen on the skeleton. The muscles markings are clear and well delineated, and the right upper limb bones are longer than the left. As previously stated, osteophytosis is present on the vertebral column and is especially severe at the junction of L4 and L5. Osteoarthritis is recognizable by slight lipping around the glenoid fossa of both scapulae, and also on the heads of the second and third metacarpals of both hands.

The dental health is not particularly good. Of the 25 teeth still in their sockets, 3 are carious (12%) and antemortem loss has removed the left lower M1 and M3. Calculus is present throughout the tooth set and is marked buccally on the upper premolars and buccally and lingually on the lower incisors. Once again, the upper four incisors are missing and the alveolar process around their sockets entirely resorbed.

Burial No. 3 (Fig. 4)

The cranium of Burial 3 has been damaged on its left side and on its base. The mandible has lost both of its condyles, and the post-cranial skeleton is fragmentary, with only the humeral pair, the right radius & ulna, and the left tibia intact. The vertebral column is well preserved in the lumbar region, but is represented in the thoracic segment by vertebral arches only.

The initial identification of sex by Juwayeyi (1991) was as a female, but closer examination of the fragmentary pelvis and the cranium indicate a male sex. There is no pre-auricular sulcus, a fairly narrow sub-pubic angle and a high well curved iliac blade. The cranium is also high with a narrow and nearly right angled mandibular ramus. Muscle markings on the cranium are generally well delineated and the gonial flare of the mandible is marked. The fact that this was the tallest of the six Mtemankhokwe individuals adds support to its identification as a male.

Age is more difficult to assess because the diagnostic pubic regions are missing. The medial end of the clavicle is fully formed and united to the shaft indicating an age in excess of 25 years. The rib ends do not appear to be

Fig. 3. Facial and left lateral views of Burial 2.

Fig. 4. Facial and right lateral views of Burial 3.

cupped significantly and the corpus of the sternum is free of the manubrium. All sutures of the vault remain patent, and the dental attrition is the least of all six individuals from this site. Although only an estimate, the most likely age at death would have been in the man's late 20's or early 30's.

The health condition of the skeleton is quite good. There is a very mild periosteal reaction on the distal end of the popliteal surface of the right femur. No osteophytosis is present on the available vertebral bodies. Caries is not present on the dentition, but the lower right M1 has been lost ante-mortem and its socket is partially resorbed. The ante-mortem loss on this comparatively young individual is coupled with the development of calculus on the buccal surfaces of all of the upper teeth. The lower molars and premolars are clear of calculus, but the lower incisors and canine are heavily encrusted on both buccal and lingual surfaces.

The most distinctive feature of the dentition of this skeleton is the mutilation of the upper incisors. The two central incisors had been removed some time before death as the sockets of these teeth have been substantially

resorbed. The two lateral incisors are intact, but the alveolar process on their mesial edge is partly resorbed and little bony material is holding the teeth in their sockets. These lateral incisors have been chipped buccally to remove a notch from the crown. The lesions are mirror image bilateral and are clearly not accidental.

Burial No.4

Skeleton 4 is the least complete of the six individuals. Juwayeyi's report indicates that this individual was buried sitting upright. No cranium (nor its fragments) was found. The mandible is present but the post-cranial set is damaged with many missing elements. The left arm is represented only by the distal half of the humerus and the vertebral column consists of C 1-7, T1-5, T12, and L 1-4. The pelvis is damaged and none of the bones of the leg is complete.

The presence of a well preserved mandible but no sign of a cranium is not surprising considering the cemetery had been used for cultivation in recent times. Juwayeyi indicates that Burial 4 was identified at 1.4 metres depth, well below the cultivation zone, but "it took some time before we realized that the few bones - mainly ribs - already recovered were part of a complete burial" (Juwayeyi 1991:30). The cranium had obviously been much higher in the soil column and cultivation practices sometime in the past had allowed its exposure and subsequent loss. This same pattern of cranium loss in an otherwise undisturbed Iron Age sitting burial has been seen in South Africa (Taylor 1979).

Burial 4 is definitely that of a woman. The broken hip bones cannot be aged, but they show wide sciatic notches and minor parturition scarring inside a pre-auricular sulcus. No maximum age at death can be defined, but the union of the medial epiphysis to the end of the clavicles indicates that the woman was fully adult and probably older than 25 or 30 years at death.

Arthritis is the only osteological disorder visible on the skeletal remains. The zygopophyseal joints between the arches of C5 to T1 all demonstrate slight arthritic changes, and the preserved ulna of the right arm has lipping on its humeral articulation. The arthritic problems appear to have been relatively minor and probably did not affect the woman's way of life to any significant degree.

The mandible of Burial 4 is striking because of the extensive ante-mortem tooth loss. Of a total of 16 tooth positions, 11 have been lost antemortem, and the corresponding sockets have been extensively resorbed. The chewing function of the five remaining teeth must have been minimal as only the two left premolars provide an extended occlusal surface and the other teeth (the right canine, right M3 and left M2) are isolated from each other by gaps. All teeth demonstrate moderate wear and the M3 presents some calculus.

Burial No. 5 (Fig. 5)

Burial 5 is represented by a fairly complete skeleton. The cranium is somewhat crushed, with much of the face and base broken. Some distortion is present on the left side due to the crushing of the left frontal region. The

Fig. 5. Facial and left lateral views of Burial 5.

biometric point nasion has been lost. The mandible is well preserved.

The post-cranial skeleton is essentially complete, but quite a number of the bones are broken. Most of the cervical vertebra are broken, but the whole pre-sacral set can be identified. The feet and hands are complete, but the right tibia and both femora are broken at their ends.

The structure of the pelvis of burial 5 identifies it as a

male with a particularly narrow greater sciatic notch and sub-pubic angle. The pubic symphysis is well preserved and indicates an age greater than 36 years (McKern 1970). That the age is well in advance of 40 years is confirmed by extensive cupping at the rib ends complete fusion of the coronal suture and partial fusion of the sagittal suture. Although further age estimates, such as from the radiographic structure of the proximal femur, are not available, the general appearance of the skeleton suggests an age older than 50 years at death.

Osteophytosis is present on the lower thoracic and lumbar vertebra, and is particularly severe on the lower lumbars.

As with the previously described crania, this individual demonstrates tooth mutilation on the anterior maxilla. All four upper incisors have been lost ante-mortem and the sockets are entirely resorbed. The general health condition of the dentition is similar to the other individuals. Caries is present on the left lower M1. The corresponding tooth on the right side had been lost ante-mortem as has been the upper left M1. Severe abscessing is present at the root apex of the lower left M1 and calculus is present on most teeth. Buccal calculus is marked on the lower left canine.

Burial No. 6 (Fig. 6)

The last burial is the best preserved of the series. The cranium and mandible are extremely well preserved, complete with styloid processes and anterior nasal spine intact. Post-cranially most bones are present, including the hyoid. The long bones of the lower limb, although present, are all damaged at the knee and the hip and no lengths can be measured.

The excellent preservation of the pubic area allows identification of this individual as a female and also provides a reasonable estimate of her age. The face of the pubic symphysis appears quite smooth indicating that she was probably in her late 40's at death. Slight parturition scars are evident on the dorsum of the pubis. An interesting anomaly is the presence of an extra thoracic vertebra.

The dentition has once again been mutilated, and all four upper incisors have been lost with substantial alveolar resorption. An interesting note here is that part of the sockets of the lateral incisors are still visible. The evidence suggests that the upper incisors were lost earlier than the laterals. Caries is not present on the remaining teeth, but there are extensive ante-mortem losses other than the upper incisors. The left upper M2 and M3 and the lower right P2 and M1 were lost before death. The right lower central incisor is also missing with some loss of socket alveolar process. Calculus is present on nearly all lower teeth.

The T2/3/4 zygopophyseal joints of the thoracic vertebral arches are moderately affected by arthritis, as is the base of the 4th right metatarsal. Slight osteophytosis is present on the junctions of the bodies of T8/9, T10/11, and on all the lumbars. The bones of the lower limb show some pathological features that may be quite significant in terms of the individual's lifestyle. The left femur, patella and tibia are larger than their

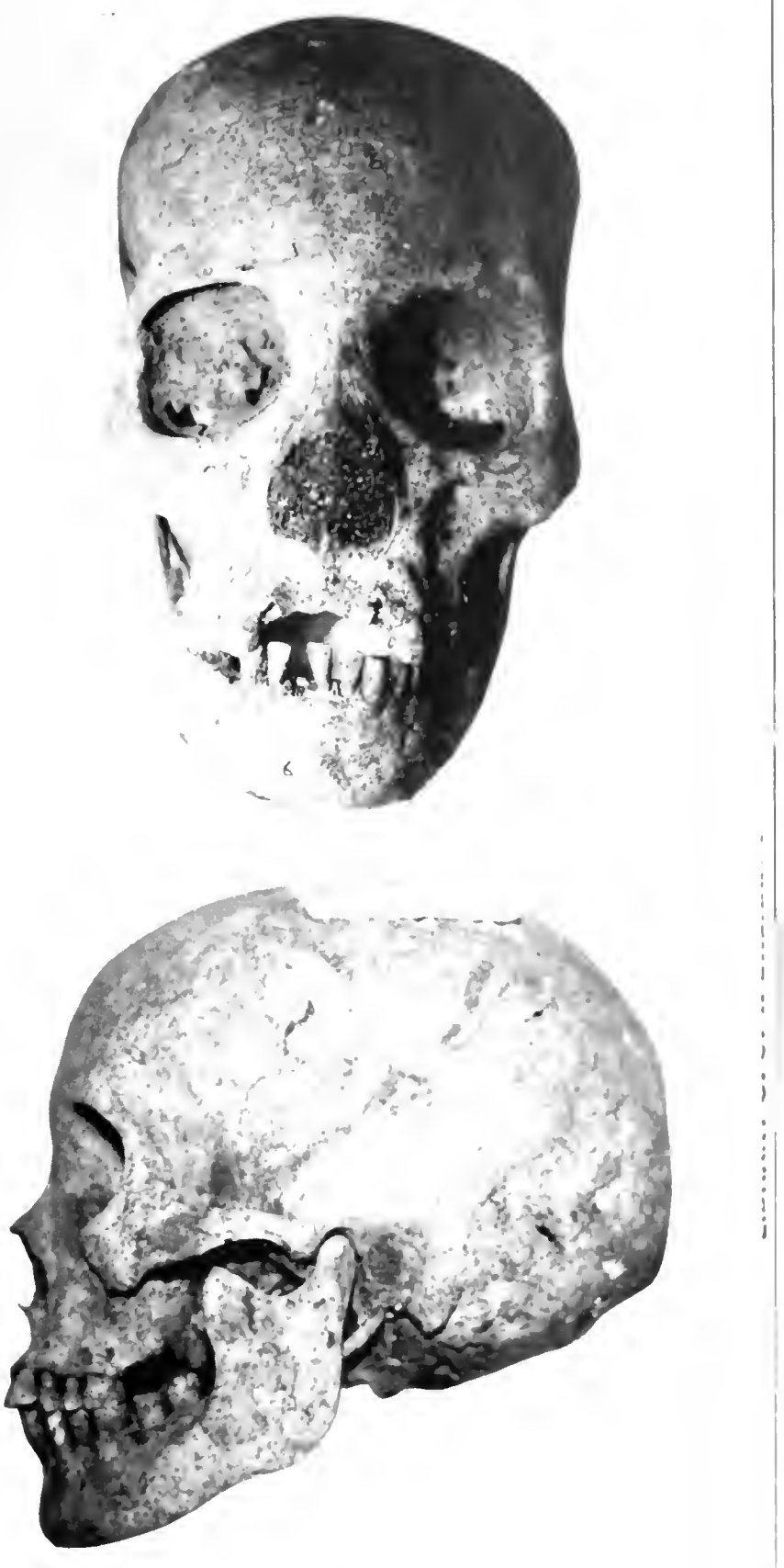

Fig. 6. Facial and left lateral views of Burial 6.

corresponding members. The bones do represent the same individual, but left femur is some 15 mm larger in mid-shaft circumference, and the linea aspera on the right femur is nearly non-existent. The proximal end of the right tibial shaft shows a lateral pathology marked by periosteal inflammation and deposition. If this represents a chronic disorder, it may account for the thinner right limb as bone wastage if the individual actively avoided placing weight on the limb for a long period of time.

Burial 6 also contains some remains of a second individual. The proximal half of a left radius and most of a set of lower limb bones of a smaller individual were excavated with the complete individual. Careful

comparison on the bones confirms that there is no confusion with the thinner femur of the first individual. The lower limb bones consist of a tibial pair (the left tibia is nearly complete and is 347 mm in length), a damaged fibular pair, a pair of tali, the right calcaneus, 10 metatarsals and 6 phalanges. The reconstructed height from the left tibia gives a stature of 1,52 or 1,55 m (depending on sex), both figures of which are well below the 1,59 m calculated for the complete individual.

SEX, SOCIAL STATUS AND ASSOCIATED ARTEFACTS

The analysis of the archaeology of the burials by Juwayeyi (1991) brought to light a number of questions concerning the social identification of the individuals in relation to their burial posture or associated grave goods. In particular, Burials 4 and 5 were assigned the roles of "chief" and "slave" respectively, based on their burial position. Now that the skeletons have been analysed, the sex and age categories can be compared more fully to the burial information.

The six individuals from Mtemankhokwe consist of three males and three females (Burial 3 was incorrectly identified as a female in Juwayeyi's paper). The grave goods associated with Burials 1 to 3 and 6 form an interesting pattern. The males were associated with clusters of arrowheads, while the females were buried with clusters of pots. All individuals wore beads or wire decorations. The inclusion of Burials 4 and 5 cloud this initial clarity. Burial 4, that of an adult woman, has a particularly rich decoration of ivory and iron bangles and also is associated with the largest cluster of 26 arrowheads. Burial 5, that of an older man, has no grave goods at all other than beads. Juwayeyi has suggested that the difference in grave goods between Burials 4 and 5 indicates social status. If this is true, then matrilineal power, or recognition of matrilineal importance, must have been an aspect of the Mtemankhokwe social life. The assumption that Burials 4 and 5 are linked temporally is an interesting one, but in the light of the disturbances evident in the burial sequencing at Nkudzi Bay and the presence of parts of an extra individual with the Mtemankhokwe Burial 6, the assumption of contemporaneity of Burials 4 and 5 may not be correct.

The posture of Burial 6 is unlikely to represent any particular aspect of the death of this individual. The posture is abnormal in that all of the other Mtemankhokwe and most of the Nkudzi Bay burials are extended on their back. One Nkudzi Bay burial, that of the infant number VII, is loosely flexed on its side (Inskeep 1965). Mtemankhokwe Burial 6 demonstrates no osteological features which reflect the terminal illness of the individual, but evidence is present indicating some osteoarthritis and a long term wastage of the right leg.

RECONSTRUCTED STATURE AND POPULATION ORIGINS

No large comparative series of modern crania from south-central Africa is currently available for comparison to the Mtemankhokwe remains. The only excavated skeletons that can be compared are the archaeologically similar series from Nkudzi Bay, but this is a very small sample. Of the 12 burials identified by Inskeep (1965) only three were of adults or near adults and none have been fully published. Brauer (Brauer & Rosing 1989) has included three crania with some measurements from this site, but one is mis-identified and is not from Nkudzi Bay (Livingstone Museum 6408 is recorded in the Museum catalogue as coming from Barotseland), and although the other two are certainly specimens from the Inskeep excavation (Museum number 6709), the burial number has not been recorded for either individual. Brauer has tentatively identified these two individuals as being one male and one female, and his published measurements are included here in Table 5. No statistical comparison is warranted for such small samples, but a comparison of the Mtemankhokwe and Nkudzi Bay data show their basic similarity.

Table 5. Comparison of Nkudzi Bay and Mtemankhokwe.

SAMPLE	Mtemankhokwe		Nkudzi Bay	
SEX	M	F	M	F
n	3	2	1	1
MEASUREMENTS (mm)				
Maximum Cranial Length (L)	185.5	183	190	175
Maximum Cranial Breadth (B)	127.7	128.5	134	-
Basibregmatic Height (H')	-	136	134	127
Least Frontal Breadth (B')	103	92.5	109	92
Bizygomatic Breadth (J)	146	117.5	(138)	-
Prosthion-Basion Length (BPL)	-	-	(72)	60
Orbital Breadth (O_1)	37.7	37.5	46.5	42
Orbital Height (O_2)	35.7	33	36.5	30
Nasal Height (NH)	46.7	47.5	53	43
Nasal Breadth (NB)	27	29.5	35	25
INDICES				
Cranial (100 B/L)	67.3	70.2	70.5	-
Cranial Height (100 H'/L)	-	74.4	70.5	-
Orbital (100 O_2/O_1)	94.8	88.0	78.5	71.4
Nasal (100 NB/NH)	57.9	62.2	66.0	58.1

Each of the Mtemankhokwe skeletons has been used to reconstruct the height of the individual in life (Table 6). The formulae used for this procedure are from Lundy (1983) and Lundy & Feldsman (1987) and are based on South African Negro peoples. Lundy's 1983 analysis showed that the traditional Trotter and Gleser formulae based on American Negro peoples consistently over-estimated the living stature of South African peoples, and that his new calculations were substantially more accurate. Applying these South African formulae to a Central African population is problematic, but these are currently the only formulae available for native African peoples.

Lundy's & Feldsman's calculations can be used for most of the limb bones, but the accuracy is greatest for the long bones of the lower limb. Since these bones are not well preserved at Mtemankhokwe, comparison of heights calculated from different bones and summarising heights calculated from different bones on the same skeleton is difficult. The problem is solved here by multiplying the calculated stature by the square of the r-correlation coefficients (the coefficient of differentiation). This weights the formulae according to their accuracy.

The stature of living Malawian people has been the

Table 6. Height reconstruction.

Burial 1 (male)	Bone	Height	error
	Femur	155.02	+/- 2.80
	Tibia	156.88	+/- 3.44
	Radius	161.82	+/- 3.64
	Ulna	162.92	+/- 3.73
Burial 2 (female)	Bone	Height	error
	Radius	150.30	+/- 3.39
	Ulna	150.64	+/- 3.63
	Humerus	149.33	+/- 3.72
	Tibia	146.60	+/- 4.13
Burial 3 (male)	Bone	Height	error
	Tibia	162.96	+/- 3.44
	Humerus	160.69	+/- 3.83
Burial 4 (female)	Bone	Height	error
	Radius	153.63	+/- 3.39
	Ulna	155.24	+/- 3.63
	Humerus	147.68	+/- 3.72
Burial 5 (male)	Bone	Height	error
	Tibia	157.37	+/- 3.44
	Radius	165.52	+/- 3.64
	Ulna	166.08	+/- 3.73
	Humerus	156.92	+/- 3.83
Burial 6 (female)	Bone	Height	error
	Radius	159.46	+/- 3.39
	Ulna	162.51	+/- 3.63
	Humerus	155.25	+/- 3.72

r^2 corrected average stature for each burial

#1 (Male)	158.9	#2 (Female)	149.3
#3 (Male)	161.9	#4 (Female)	152.3
#5 (Male)	161.2	#6 (Female)	159.1
Average Male	160.7	Average Female	153.6

object of a most interesting study by George Nurse (1968). Nurse collected data on 40,000 Malawian men who had been recruited for various jobs, and he analysed the data according to location of origin (but not ethnic identity) in Malawi. The national average for men in Malawi was 1,6556 +/- 0,582 m, but Nurse noted that the average for men in various parts of the country either exceeded or was below the national average. Nurse's explanation was that the deviations from the national average were due to population origin differences.

The average stature for the Mtemankhokwe men is 1,607 m, well below the national average for modern Malawi. The regions studied by Nurse include 389 men from Fort Johnston District (at the southern tip of Lake Malawi) and 1185 men from Kasupe District on the Shire River below Zomba. The statures in these areas were near the national average (Fort Johnston) or slightly above the national average (Kasupe). Nurse's data show that some 24.7% of men at Fort Johnston, and 19.1% of men at Kasupe, were below 1,60 m, indicating that the smaller stature at Mtemankhokwe is not unrealistic. If we use Nurse's argument that stature reflects the population origins of modern Malawians, then the Mtemankhokwe people either represent a non-Maravi group, or that the modern Nyanja-speaking peoples have undergone a secular trend in stature that has produced substantially larger average heights in modern times. Unfortunately, arguments about origins and secular trends must wait until the South African height reconstruction formulae are checked against living Malawian populations.

DENTAL HEALTH AND DIET

One of the notable features of the dentition of the Mtemankhokwe burials is the relatively poor state of dental health. Every individual presents both calculus and ante-mortem loss of teeth (even if the incisors discussed below are excluded). Three of the individuals have caries, and two demonstrate abscesses on the tooth roots.

The frequency of caries is related to three major factors; genetic susceptibility of the individual, geochemical variations in the local food/water sources, and kind of diet. The presence of fluorine and other cariostatic compounds in the local water source has a great impact on the amount of caries, but if the geochemical background is known and can be corrected for, then comparisons of caries rates between populations will primarily reflect the dietary pattern. It is recognized that agricultural diets with their preponderence of soft and sticky foodstuffs, tend to be extremely cariogenic (Turner 1979). If caries are prevalent, ante-mortem loss of diseased teeth is a frequent result.

Turner (1979) has compared the frequency of dental caries in samples drawn from populations with different economic backgrounds and has noted the frequency of carious teeth to be 1.6% of the total tooth number for 12 hunter-gatherer samples, 5.1% for 13 samples with mixed economies (agriculture supplemented by hunted and gathered foods) and 10.4% for 32 samples of populations whose food sources are entirely agricultural. Turner speaks of a 2% non-agricultural threshold below which a purely hunting and gathering people can be identified. Traditional pastoralists also are very active hunters and gatherers and therefore will also fall within this range.

For the case of the Mtemankhokwe skeletons, there are some possible African examples for comparison. Morris (1992) has described the pattern of dental disease amongst the Riet River and Kakamas peoples (late pre-historic and proto-historic groups of herders in the middle Orange River valley) and amongst the Griqua (an early historic group of agro-pastoralists with access to refined foods from the Cape Colony). Other comparative samples can be drawn from the San of the Kalahari (Van Reenen 1964), from the urbanizing South African Negro populations of the Witwatersrand in South Africa (Staz 1938), and from the data provided by Walker & Hewlett (1990) on Central African pygmy foragers and neighbouring Bantu-speaking farmers.

Tables 7 and 8 compare the caries and ante-mortem loss rates in these various populations. The Kakamas and Kalahari San demonstrate the very low caries rates for hunter/herder populations in high fluorine environments, both well below Turner's non-agricultural threshold. The Riet River people who live in a lower fluorine environment have an elevated caries level, and a slightly elevated rate of ante-mortem loss. The Griqua also have an somewhat elevated caries and substantially elevated ante-mortem loss rate, but because they are in a relatively

Table 7. Comparative caries incidence.

	number indivs	% indivs with caries	total teeth	% teeth with caries	av. # of carious teeth per mouth	Ref
Riet River	46.5*	41.7	1061	4.3	1.0	1
Kakamas	42.5*	18.8	989	1.3	0.3	1
Kalahari San	104	7.7	3335	0.5	0.2	2
Griqua	26	42.3	575	5.2	1.2	1
Rural S.A.Negro	300	38.3	9226	2.3	0.7	3
Urban S.A.Negro	300	90.0	9178	14.3	4.4	3
African Pygmies	184	-	5149	5.6	1.6	4
Zaire Bantu	21	-	630	8.1	2.4	4
Mtemankhokwe	5.5*	83.3	115	5.2	1.0	5

* some individuals represented by mandible or maxilla only.

References
1) Morris 1992
2) Van Reenen 1964
3) Staz 1938
4) Walker & Hewlett 1990
5) this study

Table 8. Comparative ante-mortem tooth losses.

	number of indivs	% of teeth lost ante-mortem	average number of ante-mortem losses per mouth	Ref
Riet River	46.5*	6.1	2.0	1
Kakamas	42.5*	4.1	1.3	1
Griqua	26	17.0	5.4	1
African Pygmies	184	11.9	3.8	2
Zaire Bantu	21	5.4	1.7	2
Mtemankhokwe	5.5*#	17.6	5.6	3

* some individuals represented by mandible or maxilla only.
\# extracted incisors not included as ante-mortem losses.

References
1) Morris 1992
2) Walker & Hewlett 1990
3) this study

high fluorine area, this does reflect the introduction of agricultural food and sugars (Morris 1992). Staz's (1938) data for non-urbanized Negro populations is lower than the Griqua sample, but the relatively high number of affected individuals demonstrates the agricultural link between the two. The diet of these rural African people is based on a staple of cereal maize and sour milk and it is probably only the fairly high dental attrition rate and perhaps a higher fluorine level that has allowed the caries incidence to remain low. Both the Central African pygmy and the neighbouring Bantu-speaking groups rely heavily on agricultural foods and this is reflected in the relatively high caries percentage. Although the pygmies are primarily hunters, their trade with their neighbours has introduced a great deal of agricultural products (Walker & Hewlett 1990). The very high number of ante-mortem losses amongst the pygmy groups is due to the habit of decorative tooth chipping which seems to predispose these teeth to dental decay and exfoliation. Of the teeth lost amongst the Mbuti, 59% are incisors (Walker & Hewlett 1990).

The Mtemankhokwe individuals seem most to resemble the Griqua sample. The overall caries rate is 5.2%, and 17.6% of teeth have been lost ante-mortem. The average number of ante-mortem losses per mouth is nearly the same as in the Griqua sample. Table 9 summarizes the disease pattern by tooth type and emphasizes the similarity of Mtemankhokwe to the Griqua. In non-agricultural peoples, the 3rd molar is the tooth most frequently affected by caries and incisors and canines tend to be fairly disease free. When agricultural foods are involved, the 2nd molar is most frequently involved, but it is 1st molar that is most commonly carious in European samples where the amount of occlusal attrition is very reduced and the food sources are

Table 9. Dental disease by tooth type.

NUMBER OF CARIOUS TEETH (Jaws combined)

	Riet River		Kakamas		Griqua		Mtemankhokwe	
	n	%	n	%	n	%	n	%
I1	0	0.0	0	0.0	3	10.0	0	0.0
I2	0	0.0	0	0.0	1	3.3	0	0.0
C	0	0.0	1	7.7	3	10.0	1	16.7
P1	3	6.5	1	7.7	3	10.0	0	0.0
P2	7	15.2	0	0.0	4	13.3	0	0.0
M1	5	10.9	4	30.8	5	16.7	3	50.0
M2	14	30.4	3	23.1	7	23.3	1	16.7
M3	17	37.0	4	30.8	4	13.3	1	16.7
TOTAL	46		13		30		6	

NUMBER OF TEETH LOST ANTE-MORTEM (Jaws combined)

	Riet River		Kakamas		Griqua		Mtemankhokwe	
	n	%	n	%	n	%	n	%
I1	6	6.3	7	13.0	18	11.8	4	12.9
I2	5	5.3	8	14.8	15	9.9	2	6.5
C	2	2.1	7	13.0	15	9.9	3	9.7
P1	9	9.5	5	9.3	16	10.5	1	3.2
P2	9	9.5	7	13.0	19	12.5	3	9.7
M1	19	20.0	4	7.4	23	15.1	10	32.3
M2	21	22.1	4	7.4	26	17.1	4	12.9
M3	24	25.3	12	22.2	20	13.2	4	12.9
TOTAL	95		54		152		31	

refined Staz (1938). Mtemankhokwe shows this pattern very well.

Juwayeyi (1991) has provided evidence that the Mtemankhokwe people were the ancestors of the living Nyanja-speaking people of southern Malawi and were agriculturalists who grew sorghum, millet and maize but also hunted. A mixed agricultural diet with a substantial input of hunted foods does seem to be likely from the evidence of diet as seen through dental disease.

TOOTH MUTILATION AND ETHNICITY IN SOUTH-CENTRAL AFRICA

Two patterns of tooth removal and mutilation are seen at Mtemankhokwe. The two upper central incisors of Burial 3 have been removed and the state of the tooth sockets indicates that resorption of these sockets was well underway at the time of death. The two lateral incisors are intact but each tooth has been chipped on its buccal surface to remove a notch from the crown. Each notch has removed about half of the occlusal surface of the tooth and given the tooth a stepped appearance. The alveolar process on the mesial edge of both lateral incisors has begun to resorb and the lateral incisors have rotated distally in their sockets (Fig. 7). The second pattern of mutilation at Mtemankhokwe involves the removal of all four upper incisors. Burials 1, 2, 5 and 6 have been treated in this manner.

If we examine the age at death of these five individuals, it becomes apparent that only one pattern of mutilation is present, and that the loss of the lateral incisors is a factor of progressive alveolar loss, not of intentional extraction. The youngest individual (Burial 3), in his late 20's or early 30's, retains his chipped lateral incisors, but already at his age, the loss of the central incisor alveolar process has altered the support for the more lateral teeth and they have begun to twist in their

Fig. 7. Close up of tooth mulitation on Burial 3. Facial and palatal views.

sockets. This process has progressed in Burials 1 (in his 30's at death) and 6 (in her late 40's at death), and the alveolar process of the lateral incisors has resorbed to the state where the teeth have been exfoliated. In both cases the sockets for the root tips are still present but the teeth are gone. Burial 2 (female) and Burial 5 (male) were both over 50 years old when they died, and the progression of alveolar loss has resulted in the complete removal of the sockets for the lateral as well as the central incisors. Burial 5 has the most extreme pattern of resorption, and the socket of the right canine is also partly resorbed with the ante-mortem loss of that tooth as well (Fig. 5). The presence of calculus on the teeth of all of these individuals must have added periodontal disease to the oral environment and this would have enhanced the speed of resorption of the tooth sockets.

The age at which the mutilation occurred cannot be directly identified. The central incisor sockets of Burial 3 were still not completely resorbed by the age of late 20's or early 30's, which suggests that removal did not occur at a time long past and that a removal age perhaps in the late teens or early 20's was likely. Van Reenen (1986) records the timing of this event for people in northern Namibia and indicates that it is variable. Most Kavango, Ovambo and Herero practioners operate when the child has just reached puberty, but some Kavango groups delay the process until puberty is well advanced because the operation is less painful the longer it is delayed.

The single pattern of dental modification at Mtemankhokwe appears to have been the removal of the two upper central incisors and the concomitant chipping of the buccal edges of the lateral incisor crowns. This particular pattern has not been recorded in the literature. Most Central African mutilations do not involve removal of teeth, but instead concentrate on a pattern of tooth chipping (Konnild n.d., Walker & Hewlett 1990). The removal of the lower incisors (and sometimes the canines as well) is much more established in East Africa where it corresponds strongly with the presence of Nilotic groups. Konnild (n.d.:30) goes so far as to state that "the removal of all of the lower incisors has a significant influence in the pronounciation of the Nilotic languages" and that the accepted pronounciation requires the removal of these teeth.

Konnild's (n.d.) extensive review illustrates that the upper central incisors are a frequent target of the mutilators, but that the removal of these incisors seems to be rare except in North African archaeological sites older than 4000 years ago. The most similar pattern of maxillary incisor removal seems to be among the Tonga people of the plateau region of southern Zambia (Werner 1906; Colson 1958). Of importance here is that it is done on both boys and girls.

The reason for mutilating or extracting the anterior teeth can be as decoration, as a mark of ethnic (tribe or class) identification, or as a rite of passage. The striking feature of the Mtemankhokwe mutilations is that all five cases are the same, for both men and women. Where the mutilation is for purposes of decoration, the patterns seen vary substantially from individual to individual. Colson, in her discussion of the Tonga people (1958), describes how the tooth removal is done as a rite of passage for both boys and girls shortly before puberty. The passage through this rite is critical to the social well-being of the individual, and Colson remarks that a girl cannot successfully be secluded at puberty if her teeth are not removed. Colson is of the opinion that use of this maturation rite for both boys and girls has the significance of marking the initiation of children into the community and that the pattern of removal is considered to be a special mark of the Tonga (Colson 1958:277). With the opening up of Tongan society to the wider Zambian community, the custom of tooth removal has stopped. The specific pattern of mutilation at Mtemankhokwe strikes me as being similar to the Tongan case. The removal, probably done as a rite of maturation, probably represents an element of ethnic identification.

SUMMARY

The six human skeletons from Mtemankhokwe represent the remains of the people of southern Malawi who lived during the late 18th or early 19th century. Archaeological evidence suggests that they were probably the ancestors of the modern Nyanja-speaking peoples. All six were adult, three men and three women. Four of the individuals demonstrate small amounts of osteoarthritis, but this should not be considered abnormal, for only one individual (Burial 3) was relatively young. The people of Mtemankhokwe were shorter than the average modern Malawian, but this remains to be verified with reconstruction formulae corrected for the local Malawian populations.

The rather poor dental health of these people is typical of agricultural peoples. The most distinctive dental feature is not the disease profile, but the dental mutilation pattern. The five crania present in the series all demonstrate the same mutilation pattern - the removal of the central incisors and probably the chipping of the buccal edges of the lateral incisor crowns.

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SOME NOTES ON GRAIN STORAGE IN THE NORTH-WESTERN TRANSVAAL*

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ABSTRACT

Clay granaries found in various inaccessible locations in the Northern Transvaal are described. Consideration is then given to contemporary ethnographic information concerning granaries in general among neighbouring peoples. It is suggested that because the inaccessible granaries have no ethnographic parallels they could have been built during times of stress before the nineteenth century.

INTRODUCTION

The discovery of a number of clay granaries (Fig. 1), found in various inaccessible locations in the Makgabeng area of the Bochum district in the northern Transvaal (Fig. 2) prompted an investigation into the origin of these structures. Other types of granaries, eg. baskets, were also found in some of these shelters. They were, however, mostly disintegrated.

Fig. 1. Granaries found in a rock shelter in Makgabeng (1989).

Local spokespersons have no knowledge concerning the origin of these granaries and they speculate that they might have been built by people who fled from Blouberg in 1894 during the war fought between chief Leboho of the Hananwa and the ZAR under Gen. Piet Joubert. This, however, seems unlikely for two main reasons: firstly, the type of granary has not been recorded anywhere in

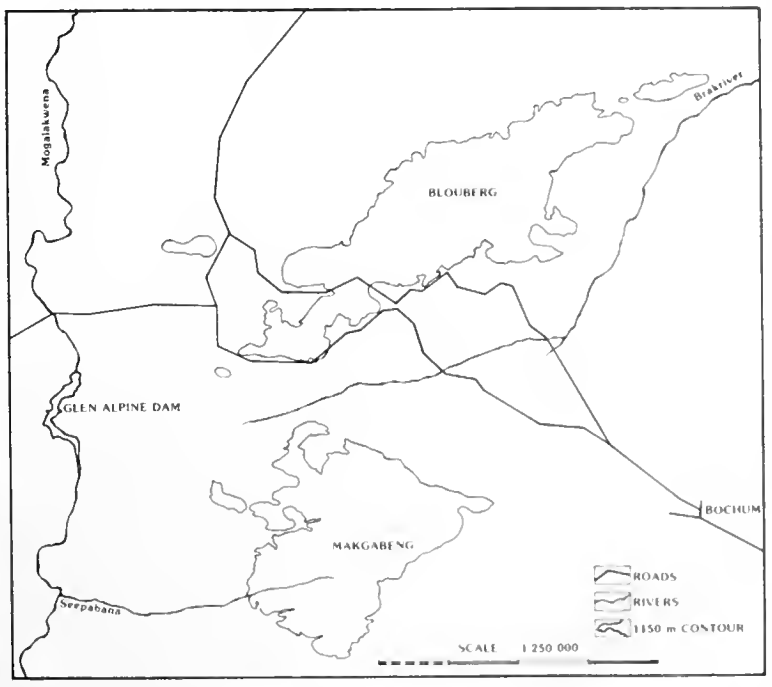

Fig. 2. Map showing the relationship of Makgabeng to Blouberg.

Blouberg itself; and secondly the war in 1894 lasted only about two months, too short a period for people to produce a crop as well as build and use the granaries.

Though the Makgabeng was inhabited variously by Ndebele, Koni, Birwa, Tlokwa, Tshadibe and other Sotho/Tswana-speaking people during historical times, it is not possible to relate these sites, with the possible exception of one, to any of these groups. Though very little pottery was found in association with the granaries, small pieces that were found on one site seems to indicate that it is of Tswana origin.

The occurrence of granaries constructed in various ways and from widely different materials is well-known

in southern African ethnography. Granaries have been described by McDonald (1940), Walton (1956), Van Zyl (1958), Redelinghuys (1968), Van der Waal (1977) Van Schalkwyk (1985) and Frescura (1981) but not in systematic matter.

The purpose of this paper is to describe unusual granaries from the north-west Transvaal and to ascertain why they do not appear in the ethnograpic record. Also, the description of these and other granaries may help archaeologists interpret excavated features.

GRANARY TYPES

The type of granary under investigation here, called **sefala**, is made from clay, approximately one meter high, with a diameter of 1,5 meters and is found mostly in caves or rock shelters. Five different sites containing such granaries occur within a couple of kilometers of each other in the Makgabeng area. Three of these site are found in very isolated places but the other two occur on sites with extensive stone-walling. Unfortunately most of the granaries have been broken by herd-boys and only the really inaccessible ones are still intact (Fig. 3).

Fig. 3. Location of one of the granary sites (1989).

Two other sites with similar **difala** (plural of **sefala**) are also known. One is in the Haakdoorndraai Nature Reserve near Marken, northwest of Pietersburg. From a published photograph (Levy 1987) there seems to be a superficial resemblance between these and the ones found in the Makgabeng area. This, however, is not the case with the second group found near the hamlet of Villa Nora(Judson 1965) not far from the Haakdoorndraai site. The big difference here is that, in the latter case, many of the granaries seems to have been double-storied as a 'floor' of wood was built in between the two openings

Fig. 4. Some 'double-storied' granaries near Villa Nora (1965).

(Fig. 4).

In the area under consideration, the north-western Transvaal, three other types of containers were until recently also used for the storing of grain. The most common of these are the large baskets called **diseho** (Fig. 5) which are woven from grass and bark. A basket big

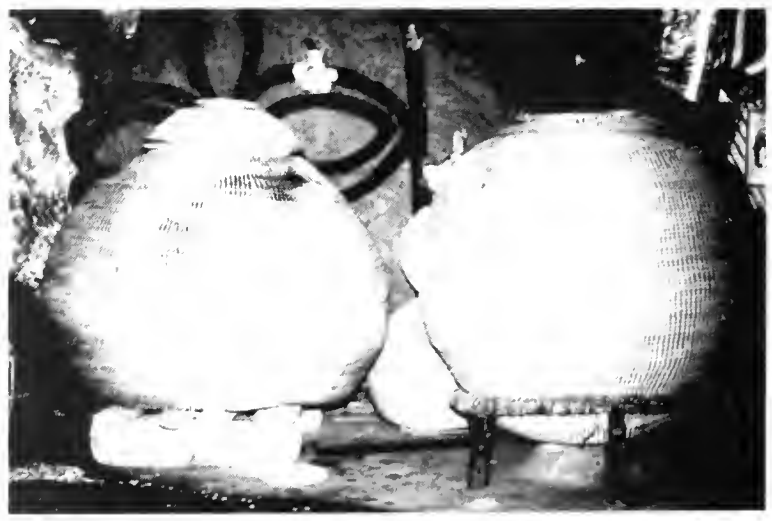

Fig. 5. Woven grain baskets kept in a house (1988).

enough to contain 10 bags of grain can take up to 6 weeks to complete, excluding the time spent collecting the material. In the past these baskets were buried in the cattle kraal (**lesaka**) but are now stored inside the house or under the veranda. The Ndebele of the Potgietersrust area used to keep them on a small platform constructed from poles covered with a loose roof of grass (Fig. 6). Colin Rae, a minister who accompanied the ZAR forces during the campaign of 1894 against the Hananwa, writes

Fig. 6. Manner in which the Northern Ndebele kept their grain baskets (1922).

Fig. 7. Holes in a cattle kraal from which granaries were removed (1989).

Fig. 8. The pot-like container for keeping beans and lentils (1991).

Fig. 9. Old type of granaries used by the Northern Ndebele (1922).

in his diary of how they went to abandoned villages in Blouberg, excavated the grain baskets from the cattle kraal and used the grain to feed their horses (Rae 1898). Figure 7 shows an abandoned cattle kraal, last used c. 1940, where the holes from which the diseho were taken when the people were resettled below the mountain are still visible.

A pot-like container (Fig. 8), also called sefala, is made of a mixture of ash and cattle dung, and is not fired like ordinary clay pots. The smell of the dung and ash protects the grain and other seeds from insect infestation. These grain pots are kept in an ordinary hut or under a veranda and are used for storing seed for the following year's planting or for keeping products such as beans and lentils.

From old photographs in the National Cultural History Museum a third type of granary known as letlolo (Fig. 9), can be identified as having been used by the Ndebele people of the Potgietersrust area. This was in the form of a small hut with a removable roof. Similar granaries to these are also known to have existed amongst Sotho groups (e.g. Molepo) in the area and are still used by some Venda.

CONCLUSION

Of the four types of granaries found in the area, only three are known ethnographically. This seems to suggest that the clay granaries were built prior to the settlement of the people now found in the area. The inaccessibility of these containers seems to indicate that they date from a period of uncertainty, probably before recorded traditions which forced people to hide their food resources.

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THE CONTEXT OF FOUR PAINTED STONES FROM THE SOUTH-EASTERN AND EASTERN CAPE*

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ABSTRACT

This paper reports on three painted stones and one possible charcoal drawing from Later Stone Age sites in the south-eastern and eastern Cape. Another find from Klasies River Cave 5 is described and it is argued that one of the two painted stones found previously at this site is not in primary context. While two painted slabs from Roodekranz Shelter near Grahamstown and a possible charcoal drawing from Groot Kommandokloof Shelter in the Baviaanskloof may be directly associated with burials, it is reaffirmed that painted stones were 'used' in several different contexts and are not exclusive to burials.

INTRODUCTION

Before 1970 a large number of painted stones (approximately 40) were found mainly along the southern Cape coastal belt and the adjacent Cape mountains (Rudner 1971). Apart from a possible painted pebble from near Lüderitz Bay (Rudner 1971:57) and a painted pebble from Abbot's Cave near Middleburg (Cape) (Sampson & Vogel 1989), the only others found outside the Cape ecozone were six painted stones discovered at Apollo 11 in southern Namibia. The date for these stones is in the order of 26 000 BP (Wendt 1976) which makes this art the oldest in southern Africa. The oldest painted stone from the southern and eastern Cape is from an occupation unit at Boomplaas Cave (Fig. 1) dated to 6400 BP (Deacon *et al.* 1976). Other 'art mobilier' in the form of engraved slabs were found at Wonderwerk Cave in the northern Cape with the oldest slab dated to 10 200 BP (Thackeray 1981; Thackeray *et al.* 1981).

The interpretation of the images on painted stones is similar to the interpretation of the wall art which, based on ethnographic and neuropsychological comparison, indicates that the art depicts hallucinations experienced by shamans when in a state of trance (Lewis-Williams 1981, 1983a, 1984, 1990; Lewis-Williams & Dowson 1989). While many of the images are undoubtedly trance related, there is little understanding of the specific 'use' context. The ritually loaded nature of painted stones suggests that their specific 'use' contexts was of an equivalent nature. However, the precise contexts from which painted stones have been recovered often remains unclear. Most painted stones recovered before 1970 were removed unsystematically and consequently there is little information available on their precise contexts. The absence of a precise provenance for many painted stones led Rudner (1971) to make a general assumption about their 'use' context. He suggested that the majority of the painted stones were cover stones for burials. However, none of the 12 painted stones found since 1970 (those from Apollo 11, Boomplaas Cave and Klasies River Cave 5) were associated with burials or found close to burials and drawing a consistent link between the two is invalid (Lewis-Williams 1984). While numerous Later Stone Age (LSA) burials in the eastern and southern Cape were found covered by flat stones (also referred to as burial stones) these are only 'painted' in the sense that they are often stained with red ochre as are the skeletons and ornaments associated with them. These 'burial' stones may have been stained indirectly.

Other contexts in which painted stones have been found include storage pits such as at Boomplaas Cave in the Cango valley where four painted stones were found

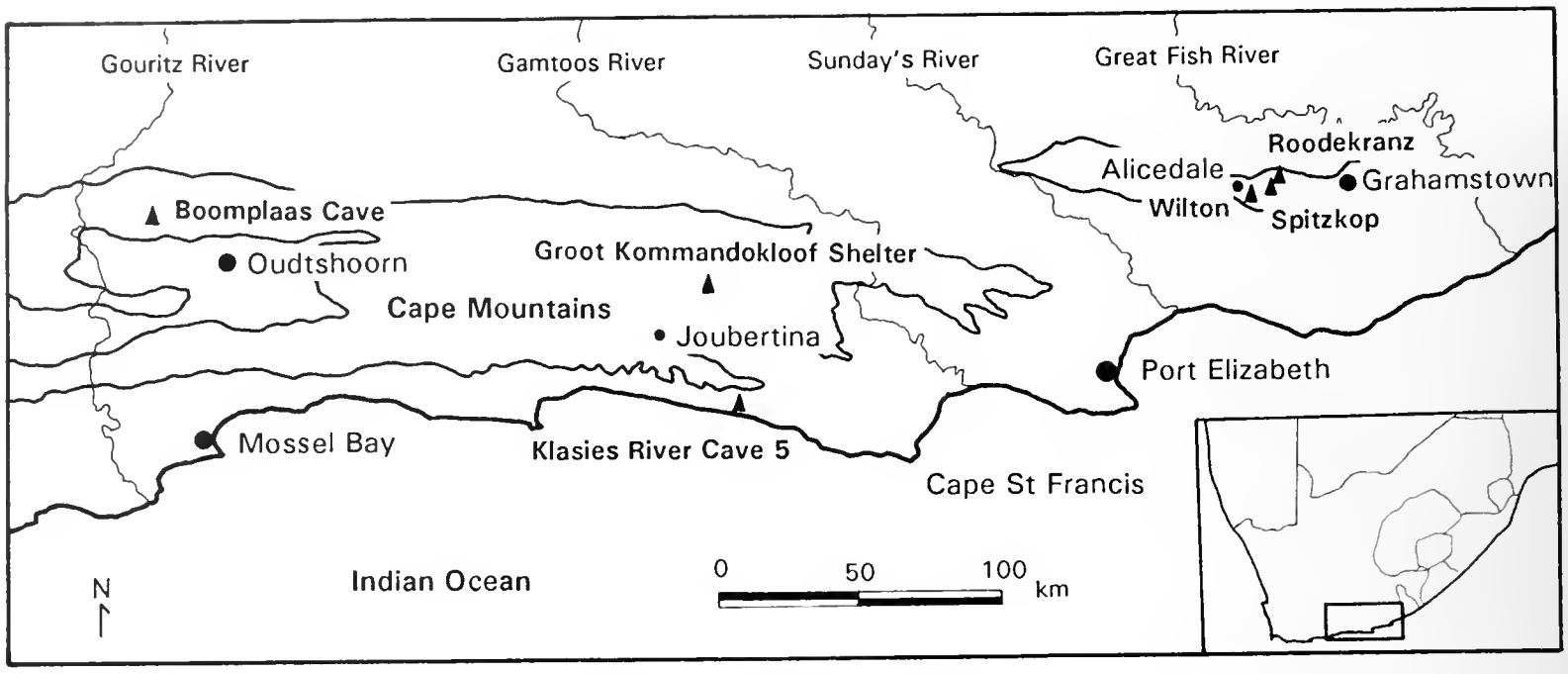

Fig. 1. Map indicating the locations of the painted stones mentioned in the text.

in association with storage pits (Deacon *et al.* 1976; Deacon, J. 1982). In the discussion below we describe the contexts of painted stones from the collection of the Albany Museum, some of which were accessioned in the 1920's.

PAINTED STONES FROM THE EASTERN CAPE

Klasies River Cave 5

The Klasies River complex of caves is situated some 40 km west of Cape St Francis (Fig. 1). Cave 5 (KRM5) is located approximately 2 km to the east of the main site, well-known for the anatomically modern human remains recovered during excavations in the late 1960's by Singer & Wymer (1982). The tunnel-like cave is about 90 m in length from entrance to rear and the two painted stones discussed here were found by the same excavators (Singer & Wymer 1969). The first stone, depicting a painting of a human and four dolphins, came from near the surface (Singer & Wymer 1969, 1982, fig. 47) and shell from the same layer has been dated to 2285 $\pm$ 105 (GX-336). It is not known if this is a corrected date. The second stone with red grid patterns on both sides was recovered from lower down in the sequence. A hearth at the bottom of the Later Stone Age sequence which overlies a thick layer of dune sand covering Middle Stone Age occupation deposits (Singer & Wymer 1969, 1982) dates both stones to younger than 4110 $\pm$ 105 BP (Geochron GX-1378) (Singer & Wymer 1969). This date is slightly different from that reported by Singer & Wymer (1982). The age of the stone was mistakenly reported as older than 4110 BP (Thakeray 1983:24, table 1).

Klasies River Cave 5 (KRM5) was re-excavated in 1984 by the first author (Binneman 1985; Hall & Binneman 1987). The excavations are located both at the entrance (KRM5A) as well as adjacent (KRM5B) to Singer & Wymer's excavations further back in the cave and in the vicinity of the painted stones (KRM5B) (Fig. 2). Another painted stone was recovered from KRM5B depicting a small antelope in red (Figs 3 & 4). Charcoal from the same layer is dated to 3900 $\pm$ 50 BP (Pta-3906). This stone comes from an undisturbed occupational horizon and is not linked to any other feature.

While the projected position of Singer & Wymer's first painted stone (Singer & Wymer 1982, fig. 10.2) appears also to have been in an *in situ* occupational context, there is reason to believe that Singer & Wymer's second painted stone (with red grid patterns) is in secondary context. The *in situ* Later Stone Age deposit from KRM5B consists of shell lenses in which *Patella longicosta* is the dominating shellfish species. These alternate with lenses of sterile dune sand which are truncated towards the wall of the cave by very loose and well sorted shellfish material dominated by *Oxystele* spp. and with little soil matrix. This loose deposit is clearly visible on the photographs published by Singer and Wymer (1982, figs 46 & 47) as well as the original witness section exposed during the 1984 excavations. A further excavation (KRM5C) half way down the slope, between KRM5A and KRM5B, revealed similar loose deposits. Analysis of the shellfish remains from KRM5C and the loose deposits showed that these have similar species frequencies to those at the entrance excavation. This indicates that a large part of the deposit against the wall is slope fill and that the projected position of the second stone is within it. The association of this painted stone with backed flakes (large segments) (Singer & Wymer 1969) may indicate a rough age for the stone. These large segments appear to be a coastal tool which to date have been recorded from between the Klasies River Caves to the mouth of the Great Fish River and date to the last 3000 years.

The Roodekranz Shelter painted stones

Although the two painted stones in the Albany Museum collection are marked as being from Roodekranz Shelter, the authors believe that this is open to debate. Rudner (1971) reported that Mr W.W. Austin excavated

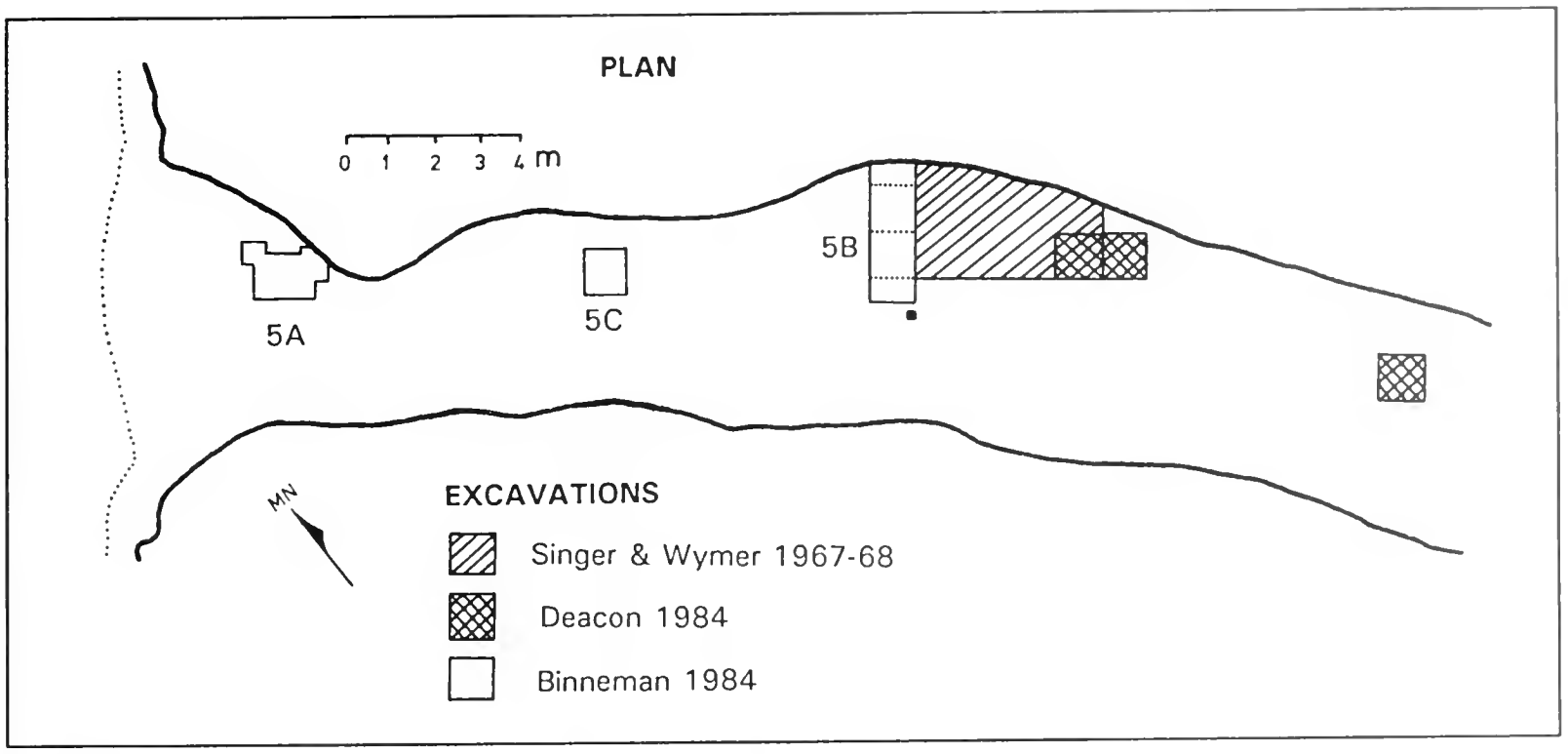

Fig. 2. Cave plan and location of the excavations at Klasies River Cave 5.

Fig. 2. Painting of an antelope on a slab from Klasies River Cave 5.

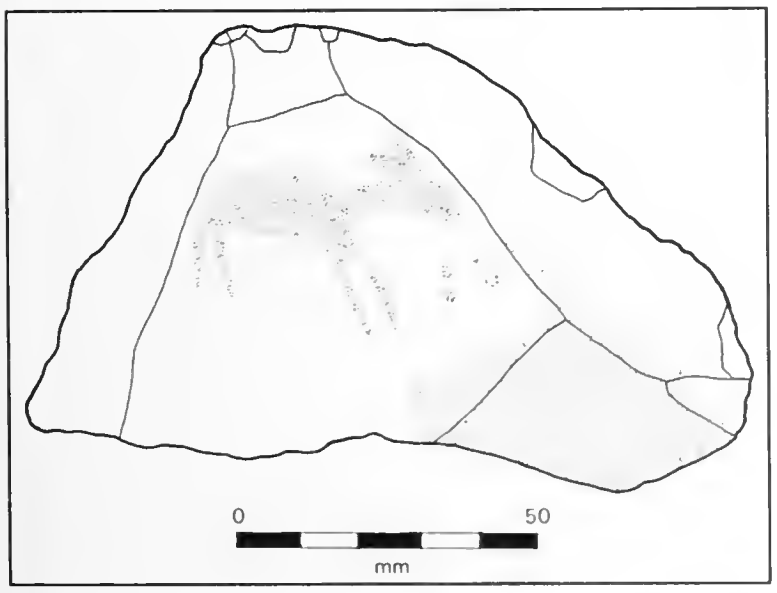

Fig. 3. Drawing of the painted stone from Klasies River Cave 5.

a shelter on his farm near Springvale, Alicedale in 1921. According to Rudner, Austin found "four burials covered by two painted slabs" (accessioned and marked as Roodekranz Shelter 1-2, AM G70) in the shelter. It is not clear where Rudner acquired this information since there are no burials in the Museum accessioned from Roodekranz Shelter. The only group of four burials donated to the Museum in 1921 from the Springvale area came from a cave on Hoffmans River on the farm Wilton (HS 120-125). This is most probably the cave Hewitt (1922:459-60) referred to when he reported on "a certain small cave two miles away from the rock-shelter (presumably Wilton Large Rock Shelter) on the farm Wilton "where four burials were found covered over by flat stones painted red on the under surfaces". It is possible that the four burials referred to by Rudner (1971:57) from 'Roodekranz Shelter', covered by the two painted stones, were actually from the site noted by Hewitt.

Furthermore, according to the Albany Museum records Mr Austin also donated 12 burials from Spitzkop Cave to the museum (HS 128-139). The farm Roodekranz is adjacent to Spitzkop and four and a half miles (7,5 km) north-east of Wilton Large Rock Shelter. This donation also included some unique ivory, bone and marine shell ornaments, shale palettes and a small number of stone implements (Hewitt 1922) (accession number AM 1921/1702, see Clark 1959). Mr Austin, it would appear, completely turned and picked over all the deposit from Spitzkop. A visit to Spitzkop indicated that little LSA material is visible in the site or on the talus. The only material recovered was phalanges missed during the original removal of the burials (Hall 1990).

Hewitt (1922:461) reported that "a coloured funeral slab of stone ... with crude paintings which somewhat resemble the very inferior later paintings - the fat-tailed sheep group - found at the Wilton rock-shelter" covered

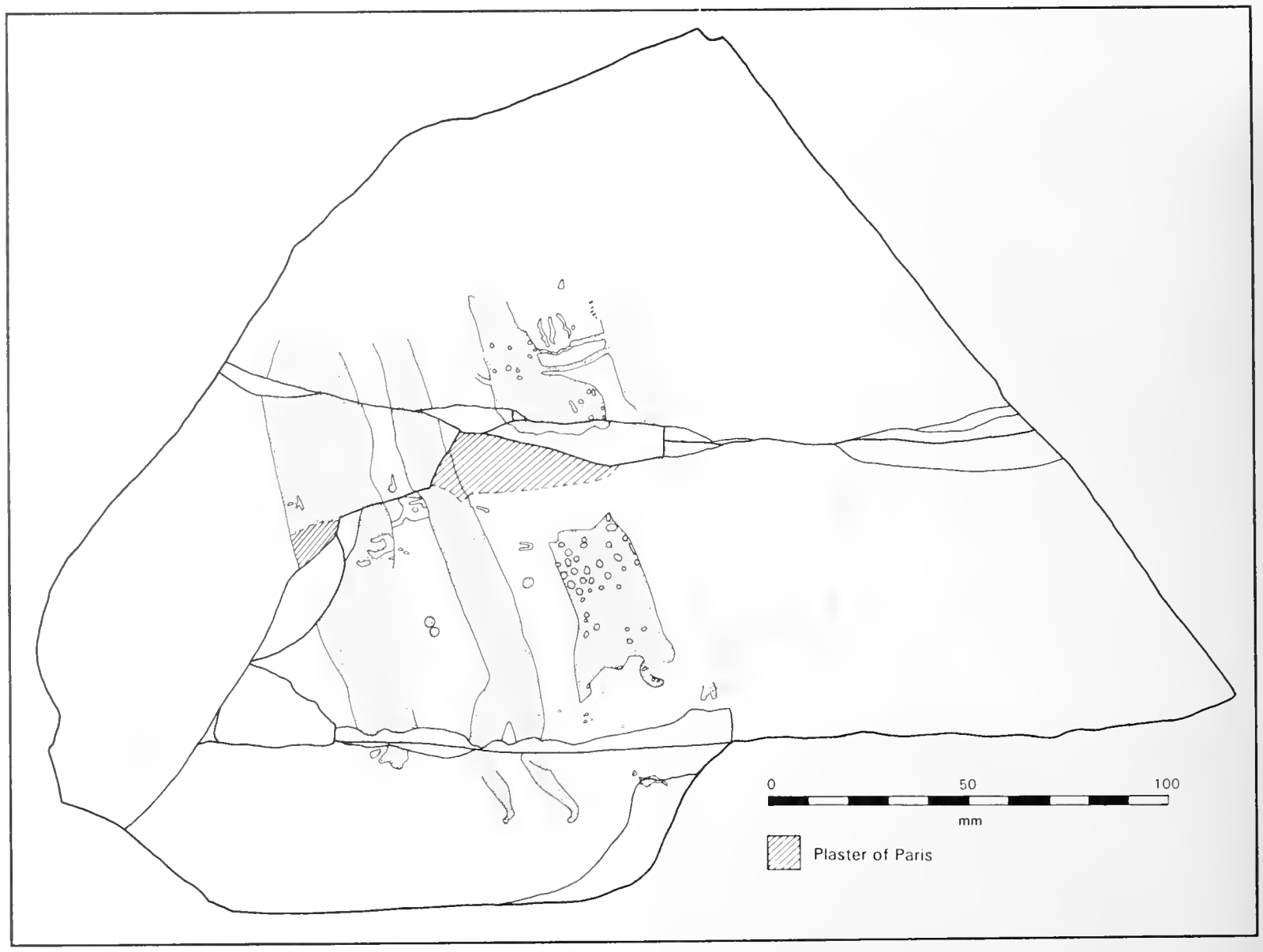

Fig. 5. Painting of elongated human figures from Roodekrans Shelter.

a skeleton in the bottom layer of Spitzkop Cave. Rudner (1971:57) on the other hand, reported that the stone from Spitzkop (S1) was "a painted burial stone ...only white marks on the red-painted slab remained". Although it would appear from Rudner's description that the paintings had faded since discovery, it is quite clear that this is not a painted stone in the true sense of the word. The stone is a typical lower grindstone with a smooth surface covered with red ochre dust which comes off easily when touched. The few isolated, minute white lines and spots can be from any substance and origin.

The only information regarding the painted stones from Roodekranz Shelter is a note accompanying a large piece of skin garment with two rows of stitching, housed at the Museum (accession number E 381). This note appears to have been written by Austin in 1921, and reads "Portion of kaross found in cave at Roode Krantz near Springvale in about 2 ft of ash (Note: painted stones were found in same cave).

On this evidence it appears that the painted stones came from Roodekranz Shelter. However, no shelter on this farm appears to be suitable. In the light of the close proximity of the farms, Roodekranz Shelter and Spitzkop Cave may be one and the same, and the names used interchangeably for the same site. It is telling that Hewitt never mentioned Roodekranz Shelter or painted stones from the site in any of his publications. While we cannot be certain as to the exact location of the painted stones, it is of interest that in all references to them they appear to be associated with burials.

The larger of the two painted stones is an irregular, thin, flat, somewhat brittle micaceous sandstone slab (Fig. 5). Several breaks run across the slab and small gaps have been filled in with plaster of Paris and painted. There are four human figures painted in red. All the figures lack heads and it is possible that these were painted in white, but faded away over time. At least one of the figures (second from the left) is unmistakably an elongated human figure with slightly bent knees but lacking arms. The other figures may also be elongated and the figure second from left appears to wear a kaross with arms outstretched. Another figure is touching it from behind. A series of white dots are present on the 'kaross'.

Despite the severe damage to the stone and the poor preservation of the pigment in some areas, several possible trance elements are visible in the painting. Following Lewis-Williams (1981, 1983a & b, 1987, 1990) and Lewis-Williams & Dowson (1988, 1989) the most obvious is the elongation. Elongated human figures are a recurring feature of San rock art and 'being tall' is a common hallucination among trancing shamans

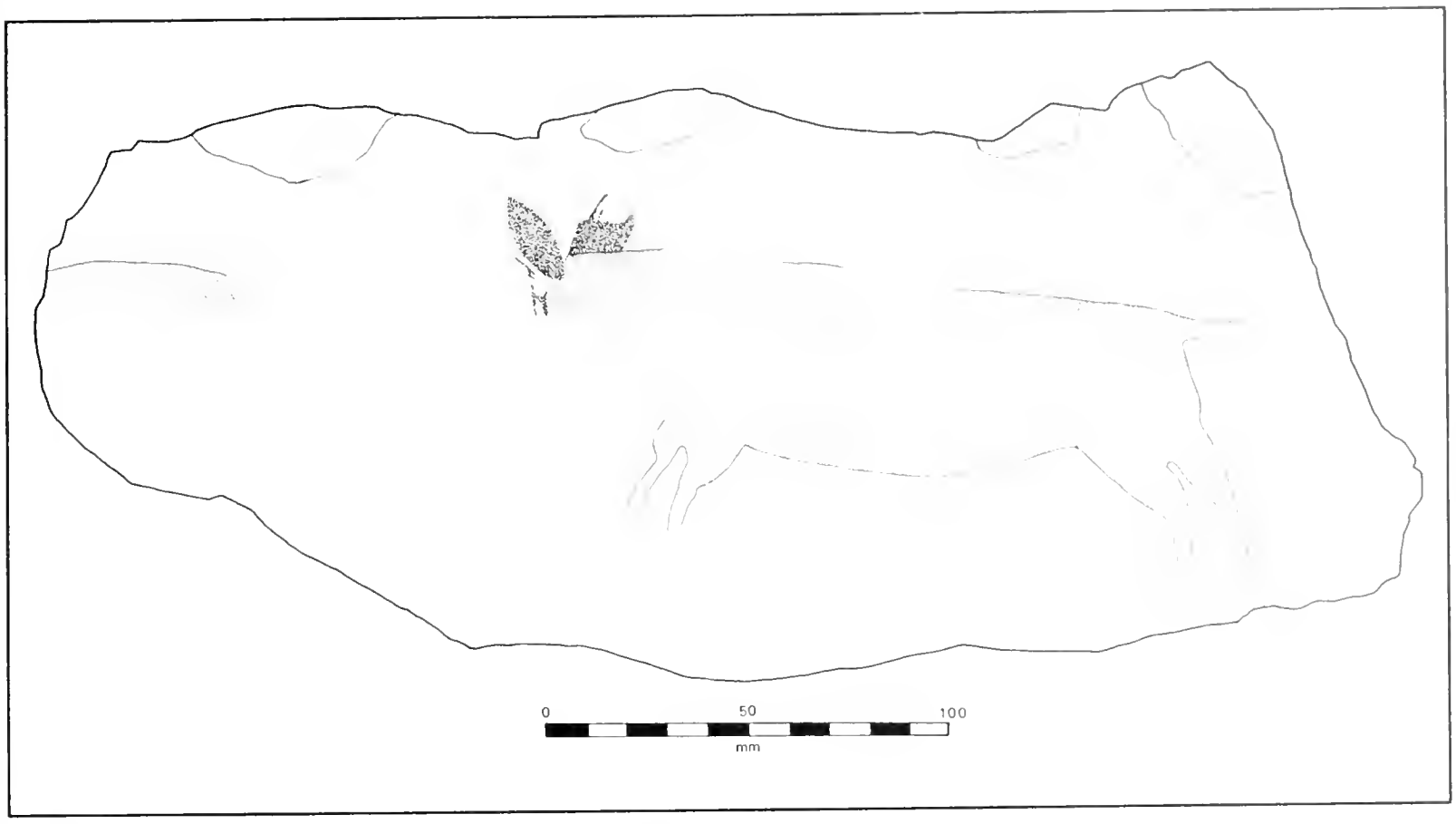

Fig. 6. Painting of two animals from Roodekranz Shelter.

(Lewis-Williams & Dowson 1989). A second possible trance element is the white dots on the kaross. Rudner (1971) interpreted these dots literally as white beads, but in view of the elongation they may also be seen as trance related because dots are one of several geometric forms which people experience when in the early stages of trance (Lewis-Williams & Dowson 1989). The two thin parallel red lines in front of the figure may represent outstretched arms or even clapping. It is not clear whether the faded patches of paint behind the kaross figure represent another human figure in which case it touches the back of the figure in front of it. Thin white lines and small dots of white paint are visible between the two figures but they are too faded for specific comment.

The second painted stone is a thin, long quartzite slab with two animals painted in red (Fig. 6). There is no explicit trance symbolism in this painting. The slab is flaked along most of the perimeter. This modification of the stone presumably took place after the stone had been painted because the head, legs, neck and front legs of the left animal are missing. One of the animals is probably an eland and the head was presumably painted in white but has subsequently faded.

Rudner (1971) speculated that both the stones may have been fragments from the wall of the shelter, but this is clearly not the case.

Groot Kommandokloof Shelter

Groot Kommandokloof Shelter (Fig. 1) is situated in the Kouga Mountains some 30 km north-east of Joubertina and was excavated by the first author. The shelter faces north-east and measures 18 m wide by 8 m deep and the roof is some 8 m high at the dripline. A testpit excavated against the back wall exposed a 0,50 m deep section with well-preserved plant material in the surface unit.

A burial of a juvenile was recovered and the bottom unit into which the burial hollow had been dug dates to 6430 $\pm$ BP (Pta-4612). The skeleton was lying on bedrock, placed on its right side in a northerly direction and in a extended position. The burial was covered by a cairn of fifteen stones (Fig. 7). Two large, flat grindstones, one of which one was stained with red ochre, were placed directly on top of the skeleton. Other stones included ochre stained hammerstones, anvils, flaked cobbles, flakes and roofrock. Among these was a block of roofrock depicting a possible human figure in black (Fig. 7 & 8).

Fig. 6. Burial cairn and the possible charcoal drawing (middle centre) from Groot Kommandokloof Shelter.

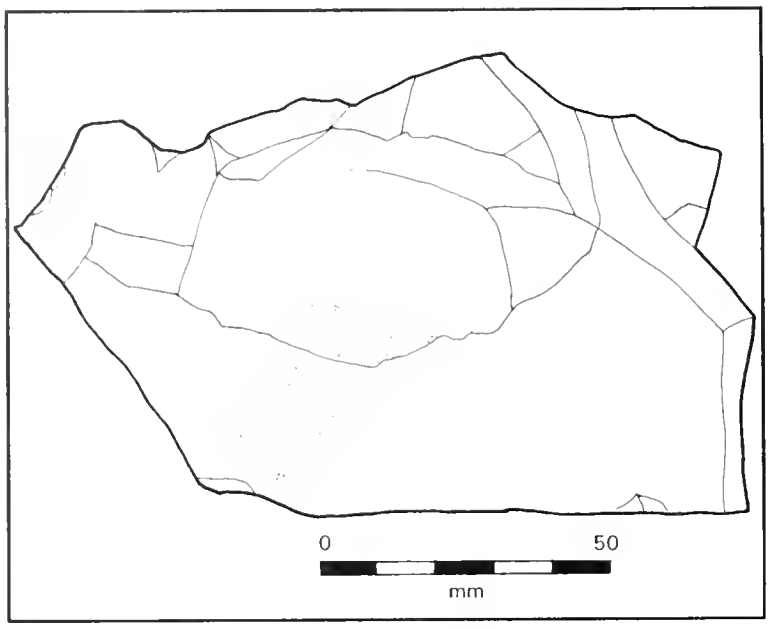

Fig. 7. The possible charcoal drawing from Groot Kommandokloof Shelter.

It is not entirely certain whether the black marking on this small quartzite block is actually a 'painting'. However, there are several indications that the markings may represent a charcoal drawing. Although the block originated from the cave wall it was wedged into the cairn by other stones which indicates that it had been placed deliberately. Although the image was brushed several times there was no visible change. However, the black is not a mineral stain and scrubbing with water would remove it. Furthermore, a dry, sterile yellow ashy soil covered the stones, with no evidence of any roots or signs of other humified or carbonised organic remains, which rules out a natural organic origin for the stain. Overall, the shape of the black marking, in the form of two slightly curved lines running from a larger body of black, is too 'structured' to be a coincidental natural organic stain (Figs 7 & 8). If this is the case then the drawing may possibly depict a human figure bent at the waist in a trance position.

DISCUSSION

That the majority of the painted stones recovered by controlled excavations during the past two decades have not been directly associated with burials is proof that Rudner's (1971) suggestion is debatable. The specific contexts of the painted stones from KRM5 reaffirms that this association is not axiomatic. Furthermore, if there was a singular association between burials and painted stones in the south-eastern Cape one would have expected to find this link within the elaborate burial complex at the mouth of Klasies 5 (KRM5A) (Binneman 1985, Hall & Binneman 1987), but no such association has been found. In fact it may be significant that there is a distinct spatial separation between the KRM5 burial complex at the front and the painted stones located further back in the more deeply recessed section of the cave. The specific location of two of the KRM5 stones is in occupational deposits and this association provides no further insight into the specific 'use' of these stones. The position of the Groot Kommandokloof Shelter 'painted' stone as well as those from Roodekranz, however, may suggests 'art mobilier' is in some cases directly associated with burials. An explanation for this association has been put forward by Lewis-Williams (1984) who has drawn attention to the posible link between the trance-world of the shamaan and the other world of the dead. A further association between painted stones and pits at Boomplaas is also possible, although the excavators see no direct functional link between them (Deacon *et al.* 1976).

From the above it is clear that the LSA painted stones from the eastern and southern Cape cross-cut many different contexts. Searching for explanations for the 'use' of these painted stones which is specific to each of these contexts is perhaps too narrow a perspective. Explaining the specific contexts of this art must surely stem first from theory, which sees the art generally as ritual representations of social and economic relationships (Lewis-Williams 1982, 1984). It is this theory which integrates the art with the wider archaeological sequence and in the case of the painted stones, they are a physical part of this sequence. A starting point would be an assessment of the apparent chronological clustering of most of the painted stones within the last 4000 years and correlating this with changes to other aspects of the sequence over the same period. Such an assessement may go some way towards further integration of the economic and the social, placing belief at the centre of action.

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IDEOLOGY AND HUNTER/HERDER ARCHAEOLOGY IN THE SOUTH WESTERN CAPE*

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ABSTRACT

The concept of cultural identity has been manipulated to such a degree in twentieth century South Africa that any discussion of the topic relating to the past is easily tainted. Here, in the light of a robust critique of our work, we re-examine some of the evidence for archaeologically visible distinctions between hunter-gatherers and herders in the south-western Cape and examine the critique itself. Among other things, we argue that the contribution of the site of Oudepost to this debate is more ambiguous than the excavator believes.

INTRODUCTION

Schrire's (1992a) critique of Smith *et al.* (1991) is a response to alternative interpretations that we offered of her work at the site of Oudepost as well as an earlier, general model of hunter-gatherer:herder interaction in the south-western Cape (Schrire 1980). Schrire (1980) argued, along with Elphick (1985), that the socio-economic distinctions drawn between indigenous inhabitants by Dutch settlers, and perpetuated in archaeological thinking, were somewhat polarised reifications of a highly fluid cycle of wealth and impoverishment. In terms of this model, those individuals termed Khoikhoin were little different from those termed Soaqua other than their having, at the moment they were seen, quantities of livestock. In the face of misfortune - drought, disease or theft - depriving them of their preferred possessions, the Khoikhoin reverted to a baseline hunting and gathering economy, suffering as a consequence a loss of social status. Many of those referred to as Soaqua could have been individuals or groups in such a predicament, albeit temporarily. In terms of this model the ascription of sites to hunters[1] or to herders, which implied to distinct economic and cultural modes, was unwarranted (Schrire 1980, 1992a).

In contrast we have argued (Smith *et al.* 1991), as has Parkington (1977, 1984), that many of those termed Soaqua were culturally hunter-gatherers and were seen as such by aboriginal herders and subsequently the colonists. Irrespective of precise etymology, the label Soaqua implied stockless people, this connotation merging pejoratively with that of thieves. Recognizing that herding societies first appeared at the Cape between 1900 and 1600 years ago, Schrire is unwilling to accept that archaeologically distinguishable cultural and economic entities persisted up to the colonial period, this being the thrust of our evidence (Smith *et al.* 1991) and the target of her critique. Schrire holds these views despite the probability that, when first encountered by European travellers, at least some hunters appear to have spoken a language different from that of the herders and, furthermore, were frequently referred to in relation to occupancy of mountainous areas (see Parkington 1984:160 for discussion).

Schrire marshalled evidence in support of her argument from her work at Oudepost, an early Dutch colony frontier redoubt. Indigenous items were recovered from among artefacts of European origin and these former were argued (Schrire & Deacon 1989) to be Khoikhoin, because it was with these people alone that the Dutch documented economic relations. The stone age items recovered from Oudepost are apparently indistinguishable from those generally found on Late Holocene sites from the Cape. It thus follows that arguments for the separation of hunters from herders on the basis of archaeological material is implausible and, furthermore, that the very distinction itself may be spurious. We recognise the importance of this claim and acknowledge the opportunity for addressing the issue potentially provided by the site of Oudepost.

Schrire (1992a) identified three issues in our paper in which we fell short. In the sections below we respond to these purported short comings. We dispute that the evidence marshalled by Schrire, either in her work at Oudepost or her critique, is unambiguous and submit that alternative interpretations remain viable.

1. We follow Elphick and refer to hunters as a shorthand for hunter-gatherers and herders for people herding livestock who also hunted and gathered.

HUNTER AND HERDER MATERIAL CULTURE

We have argued (Smith *et al.* 1991) that hunters and herders do have different, though variable archaeological signatures which can be characterized on the basis of stone tools, ostrich egg-shell beads, pottery frequencies and the overall abundance of domestic stock. To this end we presented the results of a number of excavations in sites from mountains and coastal areas in the south-western Cape. We argued that hunter sites were generally characterised by a high percentage of formal tools, a reasonably frequent use of silcrete raw material, for the most part smallish ostrich eggshell beads, a relatively infrequent use of pottery, and small numbers of sheep, if any. Herder sites generally displayed the inverse of these trends.

The first of Schrire's criticisms which we deal with is that the sites do not fall neatly into one group or the other and that the postulated signatures of hunters and herders are not invariable. Furthermore, she is concerned that we do not know whether the characteristics we isolate in different sites convey cultural identity or matters relating to chronological change or site use. In this respect she challenges us to specify how the archaeological signature of herders out hunting would differ from that of hunters.

Schrire (1992a:63 & table 1) accepted the low incidence of formal tools and silcrete raw material on herder sites, although she fails to see the incongruity of her including the site Drie Susters, with its high silcrete percentages and relatively infrequent ceramics, with sites we regard as herder. This clearly contributed to some of the overlap she claimed as evident (*ibid*). The problem with Drie Susters, we admit, may be partially due to ambiguity in our presentation and the fact that no formal tools were recovered from the small Drie Susters sample (Smith *et al.* 1991:88); but we think it is also due to her unwillingness to accept the density of ceramics as a distinctive marker.

In criticizing our use of ceramic densities - specifically, implying that the high ceramic densities from the sites of Driebos and Voëlvlei (Table 1) were contradictory to our argument - Schrire presumably had not read Sadr & Smith (1991), published simultaneously with Smith *et al.* (1991). In the former a comparison was offered of the differences in the density of pottery on various sites, including some from interior rock shelter deposits (Sadr & Smith 1991: fig. 7). It was pointed out that on coastal sites the predominant depositional matrix is comprised of shellfish remains, whilst that of interior sites is finer grained sands etc. The deposition of shell results in very high rates of accumulation than is the case of sands, thus diluting the quantity of pottery and other artefacts found per cubic metre of excavated deposit. The high ceramic densities from both Voëlvlei and Driebos reflect the compressed nature of sediments in inland sites relative to those near the coast, and are thus not directly comparable with similar calculations from coastal sites (*ibid*:113). The sites of Voëlvlei and Driebos are thus not *a priori* contradictory of our argument; we will show that they are, in fact, entirely consistent.

It is instructive to seek a method of presenting ceramic abundances which avoids the inherent limitation of density values outlined above. To this end we employ an index of ceramic frequency appropriate to the kinds of observations routinely available in the published literature. The index is simply the total number of sherds divided by the total number of pieces of flaked stone. Whilst not ideal - we consider that the weight of each may be more appropriate but such published observations are scarce - the results in Table 1 (which is structured on Schrire (1992a: table 1) clearly show that both Driebos and Voëlvlei have incidences of ceramics relative to flaked stone lower than those of Kasteelberg, and, for that matter, Oudepost, but which are more similar to the coastal sites of Witklip, Vlaeberg Areas 1-3 and Drie Susters reported by Smith *et al.* (1991). At De Hangen, another interior site, the incidence of ceramics is also low (Parkington & Poggenpoel 1971; Sadr & Smith 1991) and formal tools are abundant and of a type similar to those at Voëlvlei (Table 1). The low incidence of silcrete at De Hangen is not surprising given its location in the northern Cedarberg which is distant from known silcrete sources on the coastal plains. What is evident from Table 1 is that, whilst variable, the composition of sites labelled hunter is more distinct from that of those termed herder than Schrire may allow.

This brings us to ostrich eggshell (OES) beads and the usefulness of these artefacts as cultural markers. Schrire has problems with our interpretation of ostrich eggshell bead sizes as distinctive markers. In particular she points to the fact that very large beads are present at Voëlvlei, a site which we think was occupied by hunters on the basis of the silcrete dominated formal stone tool assemblage, ceramic densities and little live-stock. Voëlvlei and De Hangen, similar in many respects, do differ in terms of the sizes of ostrich eggshell beads. But is this a damning argument against our interpretations? We viewed the large beads from Voëlvlei as representing a one-way transfer across a permeable economic and cultural "boundary" from herders to hunters. The big beads from Voëlvlei (which, relative to other sites, are extremely large with a mean of 8,0±1,4 mm, n=84) were surprising since, until then, we had not seen such an overall large sized sample in association with a stone artefact assemblage with many scrapers and adzes, relatively few potsherds and an essentially hunted fauna. The beads from De Hangen, for instance, have a mean size of 5,7 mm (±1,4, n=267).

Beads of the sizes present at Voëlvlei are clearly an innovation of the last two thousand years (Yates in prep.) whereas the stone artefact types common at this site, specifically the adzes and scrapers, originated earlier, both locally and elsewhere in the Cape (Deacon 1976, Schweitzer & Wilson 1982, Deacon 1984, Nackerdien 1989, Manhire 1993). Whilst Voëlvlei has big beads in common with the herder sites of Kasteelberg, the latter do not have formal tools in any appreciable numbers (Table 1). In contrast to Voëlvlei they do, however, have abundant to super-abundant remains of both sheep (Klein

Table 1. Percentages of formal tools, silcrete and ceramic densities and indices of frequency from various sites in the south-western Cape. Modified after (Schrire 1992a: table 1). Please note that the ceramic densities given for WK and VL relate to all the units reflected in the left hand column.

	FT	Silc.		Ceramics	
	%	%	n	n/m³	P.I.
Pre-pottery hunters					
WK 4	5.0	29.8	734	0	0
VV*	1.8	11.2	562	0	0
DB	8.5	14.5	59	0	0
KBC/PN	2.0	23.5	5702	0	0
Post-pottery hunters					
WK 1	5.8	28.9	570		0.02
WK 2	6.3	27.8	331	10.8	0.02
WK 3	5.3	24.1	1602		0.01
VL 1	4.9	13.6	41		
VL 2	8.1	61.5	37	15.5	0.2
VL 3	4.7	42.3	256		
VV	1.8	5.4	3777	254.4	0.08
DB	4.5	12.7	1165	354.0	0.2
DS	0	33.9	62	10.7	0.5
DH	3.9	4.6	4668	54	0.07
Post-pottery herders					
DSM	0.4	3.2	236	232.5	1.1
KTB	0	0.8	119	273.8	1.5
KBB	0.2	1.5	22773	735.8	6.1
KBA	0.5	23.1**	4106	225	1.6
Historic					
Oudepost	4.2	46.5	307	1.7	0.9

Key: WK= Witklip; VV= Voëlvlei; DB= Driebos; KBC/PN= Kasteelberg C and Paternoster; VL= Vlaeberg; DS= Drie Susters; DH= De Hangen; DSM= Drie Susters Main; KTB= Kreeftebaai; KBB and KBA= Kasteelberg B and A respectively. Column headings: FT= formal tools; Silc.= silcrete; P.I.= pottery index. Further details can be found in Smith *et al.* (1991).

* site sieved with a fine-mesh screen (1.5mm) which, relative to a 3mm mesh used on other sites, increases the recovery of mostly quartz chips, thus depressing the relative incidence of formal tools and silcrete.
** admixture of MSA tools, many of which are silcrete, from gravels below

& Cruz Uribe 1989) and ceramics (Sadr & Smith 1991). At the very least we are confident that, leaving aside for the moment the issue of activity differentiation, Voëlvlei cannot be regarded as unproblematically a herder site. We prefer, on grounds that the balance of other cultural traits at Voëlvlei fall towards what we regard as the hunting and gathering spectrum, that the site is plausibly seen as such.

To pursue the issue of beads further, we turn now to smaller beads and their variable presence in sites. Our analysis of beads comes from samples collected using a 3 mm sieve, this being the minimum size mesh most widely employed in South African stone age excavations. As has been shown by sieving studies very small beads less than 4,5 mm will variably pass through a 3 mm mesh sieve (Yates in prep.). We cross-checked the effects that this may have had on a number of sites by using a 1,5 mm mesh. At Witklip, a near coastal site we inferred as occupied by hunters (Smith *et al.* 1991), the small mesh beneath the standard 3 mm retained many small beads. We also sieved with a 1,5 mm mesh a representative sample of spoil-heap from the herder site of KBB, as well as a metre square excavation at KBA and all of the excavated deposit at an unreported site KBE. As we expected, large beads were found in the excavations, but none of the Kasteelberg sites revealed evidence for the presence of large numbers of small beads.

The samples which we illustrated from Witklip and compared to Kasteelberg (Smith *et al.* 1991: fig. 6, Table 2) do not include beads from the 1,5 mm mesh. Had we been able to include them (i.e. if 1,5 mm sieved samples were generally available for comparison) the Witklip mean would decrease (from $4,7\pm0,8$ mm, $n=54$ to $4,2\pm0,8$ mm, $n=61$), thus increasing the distance between the Witklip and Kasteelberg samples and making the distinction between the two even greater.

Furthermore, the very small beads we recognize as common from most hunter deposits are insignificant in all presently known herder inventories. Large, herder-style beads are however, not just present at Voëlvlei but dominant. It thus appears that there was **not** an exchange of bead styles between the two economic groups; the transfer of bead "style" or beads themselves occurred in one direction, from herders to hunters. We surmise the negative connotations of small hunting style beads may well have rendered such items unattractive to herders.

We next consider whether differences in quantities of

formal tools and ceramics and the nature of faunal assemblages outlined in Table 1 are the result of herders out gathering or - as Schrire suggested - hunting rather than the activities of socially and economically relatively distinct populations. That herders hunted and gathered is beyond doubt. The historical sources make this much clear, as they do the fact that it was a one of a number of recourses in the event of stock loss (Elphick 1985). The implication for Schrire is that herders gathering or hunting employed the material culture found in sites such as Voëlvlei, Driebos, De Hangen, Witklip and others, this explaining among other things the low numbers of domestic animal remains recovered from such sites (Schrire 1980, 1992a; Schrire & Deacon 1989). This is an interesting idea; a number of points however, render this hypothesis less viable.

First, it should be noted that, although heavily dominated by domestic animals, the faunal remains from the Kasteelberg sites do number among them wild species as well (Klein & Cruz Uribe 1989). It is instructive that the shelly deposits from Kasteelberg B (some 1 300 years worth at the most) produced a wild ungulate density of 158 NISP/m^3 (observations from own records and Klein & Cruz Uribe 1989), compared with a paltry c. 20 NISP/m^3 from c. 4300 to 3500 year old shell middens in Eland's Bay Cave some 60 km to the north (Klein & Cruz Uribe 1987; own observations). The evidence from Kasteelberg thus reveals that wild game was not unavailable to pastoralists near the coast. Indeed, by comparison to pre-pastoral Eland's Bay it may have been locally quite abundant. There is nothing compelling in the Kasteelberg evidence to show that the occupants of the Kasteelberg area were required to remove to the mountains to satisfy a desire or a need to hunt; the evidence, in fact, indicates quite the opposite. The latter areas, anyhow, have a lower nutrient status and thus lower ungulate carrying capacity than the coastal plains (Cowling 1992; Smith 1984). In the light of this, why in the first instance herders, impoverished or otherwise, would penetrate the mountains to hunt is one question Schrire needs to answer.

Short of arguing for an entirely scavenging oriented procurement strategy for wild species, the occupants of Kasteelberg clearly did some hunting. We can surely assume that in the duration of occupation they also scraped some skins, be they of wild or domestic origin, as well as used and maintained wooden implements of some sort. If such activities did take place, the inhabitants of the sites do not appear to have made and/or used and discarded many formal stone artefacts in the process. Thus, from the Kasteelberg sites we have some indication of what herders were not prone to do whilst undertaking some hunting and other activities. We must therefore ask of Schrire's point of view just why herders produced and/or discarded quantities of formally retouched stone artefacts in one context (De Hangen etc.) but did not do so in others (Kasteelberg) when at least some activities were common to both. Furthermore, her functionalist explanation fails to account for the very little silcrete used in sites nearby the sources on the coastal plains and the more intensive use of the material elsewhere.

Another dilemma is purely a matter of cultural practice. One may ask of Schrire's perspective just why herders visiting De Hangen and other sites besides Voëlvlei should adopt a different size range of ostrich eggshell beads from that widely worn by them at the coast?

All in all we do not think that our evidence is easily accommodated by an simple argument of activity variation within a single cultural system. Schrire's interpretation seems to implicitly agree that the low numbers of domestic animals in mountain contexts is not indicative of intensive herding. If the associated material culture cannot be comfortably accommodated within a model of functional variability as we argue above, it would seem that a cultural explanation is at least worthy of consideration. In this regard, is it really necessary that the cultural signatures of what we regard as hunter sites be shown to be invariable, or for that matter absolutely different from that of sites thought to represent herders? We suggest that to suppose it should, as Schrire implies, is predicated on quite unrealistic expectations of human behaviour. Variability should in fact not be surprising. Human behaviour is known to be fluid, interactive and creative as well as conservative in some of its elements. Hodder (1982), for one, has shown that material culture variably marks and crosscuts a variety of social boundaries in at least one ethnographic context without having to deny the validity of distinctions between social groupings. In that case study at the very least, the implication was that differences in material culture, which may well mark boundaries, are difficult to predict *a priori*. In the south-western Cape we do not have sufficiently detailed ethnographic information to guide us much in this respect. The interpretive challenge, we believe, is to mediate between difference and similarity in the archaeological record and not to regard them *a priori* as epiphenomena of an underlying unitary behavioural system as Schrire seems to do.

We acknowledge certain elements common to both herder and hunter sites - to the presence of sheep and pottery and stone tools we add that of ochre, ostrich eggshell water containers, bone points and tortoise carapace bowls (Schrire & Deacon 1989). The women and men responsible for the creation of the sites on which such items are found were clearly at some level participants in the same historical developments. At deeper levels we think their worlds followed different but interrelated orbits. Evidence presented above demonstrates two points: that some substantial though variable differences in the quantities of certain items exist between a number of sites and that such sites broadly fall into two groups. The extent of conformity of these patterns is better than Schrire believes but clearly awaits further work; presently, the only apparently dissonant instance is the beads from Voëlvlei. However, attributing the presence of large beads as resulting from exchange or stylistic borrowing, as we have done, is not inconsistent with the circumstances of ethnohistorically documented clientship (Elphick 1985). It may well not be a coincidence that, situated at the interface of the

mountains and coastal plains, the beads from Voëlvlei reflect a herder type pattern of production. The uppermost levels of the site of Witklip, situated some kilometres distant from Kasteelberg, also contain formal tools, have little pottery and sheep but have beads bigger (mean of 6,3 ± 2,0 mm, n = 18) than those from sites such as De Hangen set back in the mountains.

OUDEPOST AND THE DEBATE

The second of Schrire's concerns was our critique of the Oudepost material and reinterpretation of it. Schrire rejects our suggestion that the indigenous artefacts from Oudepost (Schrire & Deacon 1989) may have entered the site during the 13/14 year hiatus in Dutch occupation which occurred after the massacre of 1673. Previously, she had argued against their being millennia old (Schrire *et al.* 1990). Both of these scenarios imply a lack of historical testimony as to who produced and used the materials, a situation which, if true, seriously undermines the case for unambiguously attested cultural affinities. The site's excavator perceptively recognized the unique possibilities for research provided by Oudepost; it is because of the apparent specificity of the documents as to who of the indigenous peoples were present at the redoubt that we need be sure the archaeological record necessarily reflects this and no other presence.

Schrire is convinced that the indigenous and colonial materials recovered come from the entire period of the redoubt's existence, dated by documentary sources to between AD 1669-1732. This conclusion is based on associational evidence and a sophisticated analysis of the diameter of clay pipe bores. This approach demonstrated evidence for a sequence in a deposit extensively disturbed by dune mole activity (Schrire *et al.* 1990). Schrire has previously stated that there is no documentary or archaeological evidence for indigenous people, be they Khoikhoin or Soaqua, living in the abandoned ruins (Schrire & Deacon 1989:111). As the Dutch were by definition largely absent, the first is perhaps not surprising. And in terms of the second, no depositional trace of the hiatus has yet been reported. We assume this would, at the very least, be necessary to yield the archaeological information needed to substantiate such a claim. Elsewhere, we have argued that the chronological interpretation of Oudepost is not unequivocal (Yates & Smith 1993).

Aside from the problem of the chronology of the archaeological remains at Oudepost, we can take issue with statements that the indigenous residues show a "distribution identical to that of colonial residues" (Schrire & Deacon 1989:111) and that they are integrally related. The evidence for this is neither presented in much detail nor is what is available unequivocal. It is worth noting that the two tables proffered to test "(t)he direct association of indigenous and colonial residues" (*ibid*) nowhere include colonial residues other than the architectural context. Clearly, because the artefacts came from excavations around the buildings they are "directly related to" these structures (*ibid*). Surely the comparison should have been between indigenous and smaller colonial artefacts as well? The concentration of stone artefacts, pottery and ostrich eggshell beads around the lodge seems good circumstantial evidence of meaningful depositional association, but one can wonder (see Wilson *et al.* 1990), if the lodge excavation has only partly intercepted a wider scatter of stone tools, etc.

A number of pits were excavated to 'test' this proposition. Stone artefacts and the like, we are told, occur repeatedly in association with Dutch residues (Schrire & Deacon 1989:106). We presume this to mean that some test pits were dug where neither were found. This point, if even implied, is presently unclear. If such test pits were not dug, then it is possible that stone artefacts would have been be found had the area outside of the distribution of Dutch remains been sampled. Equally important in these key areas would be the choice of volume for the test which would be sufficient to capture the materials in terms of the range of the densities revealed by the systematic excavations. Also necessary is the demonstration that the proportional fall-off in the densities of Dutch and indigenous materials is approximately the same as one moves away from the focus of occupation. If the peripheral tests contained indigenous items at densities which, relative to the average for the excavation, were higher than those of European items then the two would not be identically co-distributed in an exact sense.

For want of information we are not able to evaluate here these spatial propositions, but sufficient data are available for one to scrutinize the distribution of various classes of residues in time. Frequencies of tortoise and mammal bones (Cruz Uribe & Schrire 1991), indigenous items (Schrire & Deacon 1989) as well as pipe stems (Schrire *et al.* 1990) in each of the three major stratigraphic divisions are presented in Table 2. A Chi-square test was conducted of the frequencies in each category of finds through the sequence; each was significantly different from the others ($p < 0.05$, $df = 2$). These results suggest a very variable set of distributions in time and hence, potentially interesting differences between temporal units that have yet to be explored. One thing is however, clear: tortoise and indigenous artefacts at their present sample sizes and groupings have in one respect something in common and different from pipes and mammal bones. Table 2 shows that the former two have absolutely highest density values in the older unit II, whereas the latter have absolutely highest values in the middle unit I. Statistically, the indigenous remains at Oudepost are not "identically distributed" with the European materials but have a slight tendency to be most common in the oldest units. The implications for the tortoise remains are not clear, but we wonder whether the fact that tortoise humeri are larger than those from nearby indigenous sites dating within the last millennium BP. (Cruz Uribe & Schrire 1991:101-102, fig. 9) is not in any way significant? One possibility considered by these authors and then dismissed, again on distributional grounds and for the reason that the Dutch clearly ate tortoises (Cruz-Uribe & Schrire 1991:101), is that the tortoises reflect natural die offs. Another view, not addressed but clearly quite out of the question for the

Table 2. Numbers, densities and percentages of various categories of finds from the three principle stratigraphic units from Oudepost.

	Oudepost Units		
	II	I	x
tortoise density	1.7	1.4	0.1
NISP	90	74	2
%	54.2	44.5	1.2
mammal density	52	61	11
NISP	2805	3290	442
%	42.9	50.3	6.8
indigenous artefact density	6.2	5.4	1.1
n	334	290	43
%	50.1	43.4	6.4
pipe density	45	70	15
n	243	3802	619
%	35.5	55.5	9.0

(Note that slight differences in density occur depending on which of the slightly differing volumes that can be derived from the various sources are used. Sources: Schrire *et al.* 1990, Schrire & Deacon 1989, Cruz-Uribe & Schrire 1991.)

site's excavator, is that the tortoises are indeed (considerably?) older than the eighteenth century AD; although not proven by the size data, the strong temporal trend of decreasing mean sizes documented by Klein & Cruz Uribe (1989) for the region as a whole makes it a possibility.

Our final point regarding uncertainty with the Oudepost materials concerns OES beads. If one accepts Kasteelberg (KBB) as an example of a herder site, which Schrire seems to do (Schrire & Deacon 1989:111), the frequency pattern of OES beads there is quite different from Oudepost. Schrire believes her large beads from Oudepost are consistent with those of herders. This is only partly true. The Kasteelberg samples from different levels each generally exhibit a normal distribution with modes between 6,0 and 8,0 mm. Oudepost tends to a bimodal distribution with modes around 5,5 mm and 9,5 mm respectively (Yates in prep.). What may be underrepresented in the present Oudepost sample are very small beads since, whilst mostly sieved with a 3 mm mesh, occasionally only a 6 mm screen was used (Schrire & Deacon 1989:110; note that the exact amounts sieved with the respective mesh sizes are not specified). Furthermore, one result of the wet sieving used at Oudepost was that "the spray sometimes forced tiny beads ... through the 3 mm screen" (Schrire 1990:271). The effects of this are easily demonstrated by comparing the mean sizes of beads from Oudepost 3 mm sieved samples (5,5±1,7 mm, n=21) against those from a variable mix of 3 and 6 mm screens from the site as a whole (6,9±1,7 mm, n=170). There is thus a probability that the unusual mix of large and relatively small sizes in the present sample of OES beads from Oudepost would before sieving have been even more emphasised. With small and big beads occurring in a mix not documented elsewhere in the south-western Cape the Oudepost assemblage could be a mixture (Wilson *et al.* 1990), either of different cultural groups or different periods.

The above clearly does not offer a coherent choice among the possible alternative scenarios. That is not the point. The observations presented here lead us to suggest that the bulk of the colonial artefacts from the area excavated could well postdate the massacre. It is possible, therefore, that undocumented occupation of the abandoned fortifications could account for some of the indigenous materials. Equally, doubts that earlier residues have been incorporated are, in our opinion, not entirely assuaged. Both criticisms attack the assumption that Oudepost has fulfilled the undeniable potential that it offered: the apparent identity of those responsible for indigenous material items left on the site. A precise attribution demands, firstly, precision in chronological resolution and, secondly, an understanding of how the objects entered the site. The first appears to be lacking, through no fault of the excavator, in a heavily disturbed depositional environment. To the second we now turn our attention in as far as it concerns Schrire's statements about the political underpinnings of our criticisms and work as a whole.

ON VERWOERDIAN ARCHAEOLOGY AND THE DEBATE

Finally, Schrire accused us of racism, both in the models we use and in our research objectives. We feel a response in this instance is particularly called for. We contend that Schrire's discourse on the Verwoerdian underpinnings of our paper reflects more a polemical tendency to interpolate and dichotomize than it does our actual position.

Our view was that the circumstances prevailing at Oudepost, a military establishment, were not necessarily conducive to the kind of interaction implied by the indigenous items found there. This Schrire (1991:64)

counters by generalizing that "If tension always engendered avoidance, how might we rationalise the vast mulatto populations...that sprawl today across the erstwhile realms of the Dutch East India Company...?" We never said that tension always engendered avoidance; our statements concerned a particular circumstance at Oudepost. The site cannot be simply taken as Cape history writ small without denying that its particular historic moments were of any consequence. In short, we submit that there was more to events in the wider seventeenth and eighteenth century Cape than is represented by Oudepost alone. Thus, our views are right or wrong in terms of that site and period and not the Cape or the former Dutch empire as a whole. To imply, as we believe Schrire has, that the implications of the existence of what she terms "mulatto populations" were lost on us is, with deference to Whitelaw *et al.* (1992), the "cheap shot" of Schrire's response.

Our questioning of Schrire's views on the exact circumstances of social interaction which could have given rise to the residues at Oudepost was based on the fact that conflict was one of the **documented** interactions. The relationship between Dutch and Khoikhoin at Oudepost was by no means always an easy one, as witnessed by the massacre and indicated by a complaint laid against the post by one of the shepherds who claimed he had been beaten (Cape Archives, Precis and Translations of Letters Received LM 19: 2 April 1726). We would therefore reiterate our contention that after the massacre social relations between the Dutch and local people in the vicinity of Oudepost were strained; Schrire (1990:18) herself has characterised the period as "a guarded truce". Should one therefore easily accept Schrire's contention that the indigenous remains were deposited simultaneously by herders with those of the Dutch?

The records do indicate that local people were trading with and herding sheep for the soldiers at Oudepost. As far as has been published (Schrire 1990, 1991) they say nothing about co-occupation or cohabitation. Here the apparently identical distribution of both male and female indigenous items and the colonial residues is relevant. The documented associations presuppose shared domestic space. Schrire nowhere specifies the exact nature of these interactions beyond noting their intermittence and that they entailed the deposition of both male and female items (Schrire & Deacon 1989:111); nor is there discussion as to whether or not they may have changed through the span of occupation. Perhaps the first is judged as best left to common sense and the second as of no consequence.

It is, however, important to know whether the indigenous artefacts are the cumulative trace of a number of individual visits, intimate or otherwise, or the residues of periodic visits by larger groups, some of whom were trading in livestock. If the latter, why bring both men and women within the confines of a military establishment in the context of the mutual wariness which prevailed? If the former, the indigenous cohabitants have no unequivocal documentary identification, however plausible the inferences (Occam's razor?) one may choose to make on the basis of those who were recorded as being present on "official business". There are many possible permutations which could have given rise to the residues; more explicit views on this matter would be useful, particularly where so much is made of their presence (Schrire & Deacon 1989).

While Schrire may be "disturbed" (1992a:64) by the underlying political message of our paper, we are surprised at her naivety in assuming that any concern with the possibilities of sociocultural divisions is predicated on the principles of apartheid. Are we to read this to imply, as it would seem to do, that cultural and economic distinctions **of any form** are entirely fabrications of colonial and postcolonial circumstances and thus, have no part of historical enquiry? We believe not. Concern with broadly termed cultural differences as historically articulated phenomena is not necessarily predicated on racism; in examining this, it is instructive to consider research in a region other than the south-western Cape.

Primarily initiated in the work of Tim Maggs (Maggs & Michael 1976), Patricia Vinnicombe (1976), Lewis-Williams (1981) and Aron Mazel (1989)[2] archaeological research in Natal has now for over a decade variously focussed on sites yielding evidence of farming or hunting and gathering. There is evidence that important interactions took place between hunters and farmers (summarized by Mazel (1986); see Lewis-Williams & Dowson (1989: 143-145)) and the possibility of structurally similar relations, as opposed to means of production (Hall 1987). Notwithstanding this, it appears commonly accepted that "hunting and gathering and farming persevered as essentially distinct, and archaeologically recognisable, modes of subsistence until relatively recently" (Mazel 1986:442).

The Natal situation also has a particular bearing on a specific comment of Schrire's. Why is the lack of evidence for serial use of rockshelters by hunters and herders in the south-western Cape so strange - does it necessarily presuppose such a wildly improbable settlement strategy that it should be derisively characterized as "very dainty dancing" (Schrire 1992a:63)? The pattern of site juxtapositioning we presented (Smith *et al.* 1991) is analogous to that documented by Mazel in Natal for the last two thousand years (Mazel 1986). There, hunter sites also occur scattered among those of broadly contemporary farmers without evidence for serial usage. Different as the historical moments of Natal and the Cape may have been, commonalties between the two areas reveal that such an arrangement of sites is not at all strange; it may in fact be closer to a productive locational strategy than the whimsy implied by a "dainty dance" as Schrire chooses to characterize it.

Is research such as that in Natal equally characterizable as predicated on racist paradigms? Hall (1984) has pointed out that certain conceptual frames

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2. This does not deny other important contributions, both earlier and contemporary, but reflects individuals who played key roles in initiating systematic research.

within which farming communities have been characterized, specifically notions of primordial tribalism, are susceptible to an ideological reading within the broader South African social context. He did not, however, claim as unwarranted any notion of meaningfully articulated social identity such as has been a focus of work in Natal and indeed, elsewhere in the world (see Shennan 1989). We wonder, then, what makes similarly interested research in the south-western Cape so different?

CONCLUSION

Schrire (1992b:132) wonders whether we "might be guided more by ideology than any other frame of reference". One could perhaps ask the same of her work. But no matter. One feature of research into historical indigenous social formations in south-western Cape is the fact that the relevant written records are pretty patchy, sometimes hearsay and certainly not unambiguous. With due respect to Schrire (1980), we do not think that her deconstruction of Dutch accounts of indigenous groupings is conclusive or unequivocal; nor do we deny, in the light of what has come to be called "the revisionist San debate", the significant intellectual challenge and farsightedness of her contribution. We believe the matter requires further investigation, in which archaeological evidence has a crucial, perhaps definitive role to play.

As should be clear, Oudepost in our view most certainly does not unequivocally refute hypotheses of relatively distinct material cultural practices of hunters and herders. Nor are the contrasts we presented earlier (Smith *et al.* 1991) as easily dismissed as Schrire supposes. We do not argue from the archaeological evidence, as Schrire extrapolates, that continuity in some aspects of material culture across the appearance of pottery and sheep presupposes **total** cultural (behavioural) continuity (Schrire 1992a:63) and thus lack of change. Clearly, many aspects of the settlement and material culture of hunters underwent profound changes coincident with the emergence of pastoralism (Parkington *et al.* 1986, Manhire 1987, Yates et al in press). We assume that change, even profound change, does not ensure convergence and the melding of identities. Ours is not a 'pristinist' argument, but one for an appreciable cultural distinction. These respective identities however, were not ineluctable and fossilised; their existence, natures and expressions were historical phenomena. While accepting that individuals can and do cross over such cultural divides, we do not believe that it is common for whole groups to do so at one fell swoop, nor is it necessary that a culturally homogeneous society will result. Equally, the existence of distinguishable social groupings does not necessarily presuppose unremitting mutual hostility and aggression.

In the south-western Cape it is accepted that relations between hunters and herders assumed a variety of forms from raiding through clientship to economic exchange (Wilson 1969; Elphick 1985). It is interesting that some groups historically identified as Soaqua were apparently still called such, despite the fact that they were seen in possession (momentarily?) of livestock (Elphick 1985:26). It is clear that owning or herding cattle and sheep alone did not effect a transition between sociocultural identities, at least not on the temporal scale of a human lifetime. Thus key components of the evidence for the cyclical model (Schrire 1980; Elphick 1985), which eschews social or cultural factors in favour of narrow economic opportunism, may be susceptible to alternative readings.

Criticism is essential. Debate is properly served by argument around theoretical perspectives and evidence. This, Schrire has offered in part. It is not however, advanced by assertions of racist imperatives (Schrire 1992a), however subsequently modified by Schrire's own tastefully worded dictum (1992b).

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ASSESSING OUDEPOST 1: A RESPONSE TO YATES AND SMITH*

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A most gratifying number of debates has arisen from the research programme based on the excavations at Oudepost 1, Cape. They include concerns of historiography (Penn 1991), site identity (Hromnik 1990), site age (Yates & Smith 1993a) and the archaeological signature of indigenous people at the Cape (Smith *et al.* 1991). It has been a privilege to respond hitherto (Schrire 1991, 1992a & b) and I thank the present editors for this opportunity to comment, albeit briefly, on the most recent defence of their position by Yates and Smith (1993b).

The present paper (Yates & Smith 1993b) needs to be read in conjunction with their recent critique of the pipestem dating of Oudepost 1 (Yates & Smith 1993a). Both papers insist that certain of the indigenous artefacts from Oudepost 1 (Schrire & Deacon 1989) could not have been made, used, or dropped, by the kind of indigenous people whose presence at Oudepost 1 is attested in the documentary record. Both papers raise interesting issues, but they misunderstand the nature of archival sources and the formulation of archaeological inference and the pipestem critique is rife with factual errors.

The pipestem paper (Yates & Smith 1993a) purports to show that most of the deposit at Oudepost 1 accumulated in the 18th century, some 30 years after the post was established, so that peoples unknown and unmentioned in the archival record might well have been the authors of the troublesome silcrete artefacts found there. It fails to make its case mainly because it compares incomparable sets of data, some of which are wrong. Its first error is to compare the mean size of pipestem bore diameters as guides to the ages of different sites. Leaving aside the well attested variance in stem bores of pipes from the same box, site means can only reflect the true mean date there if there were a constant deposition of fragments throughout the occupation of the site. This was patently not the case at Oudepost (Schrire *et al.* 1990) and certainly not the case at the slave lodge at Vergelegen, where almost every trace of occupation was systematically removed before we got there (Markell 1993; Markell *et al.* n.d.).

Secondly, the authors might generously be seen as trying to redress this matter by comparing the Oudepost means with that of samples from shipwrecks. Unfortunately the wreck samples were not measured with the customary drill bits but with an electronic caliper. Yates and Smith try to redress the ensuing disparities by subtracting an arbitrary 0,2 mm from the caliper means. They attribute this tactic to Dr A. Markell (Yates & Smith 1993a:52, Footnote 1), but Markell who is well versed in the unreliability of caliper figures has been sadly misrepresented here (A. Markell, pers. comm.).

Thirdly, the samples that they use are incomparable with those at Oudepost because, while the means of numerous groups of pipestems at Oudepost were computed after correcting for uneven intervals of measurement (Schrire *et al.* 1990:278), the means of all of the other samples used by Smith and Yates were not. Finally, Yates and Smith try to refute the Oudepost data by ascribing calender dates to the erroneous shipwreck samples, according to a curve that was disclaimed in later years by the author himself! (McCashion & Robinson 1977:63; McCashion 1990, pers.comm.; See Schrire *et al.* 1990:293). The net effect speaks for itself.

Harsh though my comments may appear to be, they are nevertheless intended to be instructive. Yates and Smith have flown into an unfamiliar field only to rise like magpies with odd and faulty data in their beaks. Dr. Markell is sorely misrepresented and the students, whose data they have used, end up looking less competent than they undoubtedly must be. The hasty footnotes that include one reference to an unlisted paper (Yates & Smith 1993a: Footnote 3) betray an uncharacteristic rush to press by the normally judicious editor.

The present re-entry to the fray (Yates & Smith 1993b) includes a correction of my misreading of Drie Susters as a "herder" site, an innovative and self-fulfilling index of ceramic frequency that depends on the incidence of stone tools in a site and the restatement of my observation that water sieving at Oudepost probably forced small beads through the holes (Schrire 1990:271). Its main flaw resides in their claim that they are dealing with *evidence* that "archaeologically distinguishable cultural and economic entities persisted up to the colonial period" (Yates & Smith 1993b:96). We are, in fact, dealing with data that has been *interpreted* as showing that the presence of culturally different groups were

present over time. The interpretation may be tested and it may hold up or not as the case may be, but it cannot be proven by invention of events.

Thus their reiterated opinion that the large beads at Voëlvlei represent one-way penetration of herder culture into a hunter culture whose beads the herders didn't like, is untestable. It may be true, it may be false, but it fails to advance archaeological theory or interpretation because it cannot be tested.

Similarly, their interpretation that the 12 silcrete artefacts at Oudepost 1 signal the presence of hunters who occupied the post during a lull in documentary exchange, may or may not be true. Yates and Smith imagine that this proposition may be tested against the archival record. They berate me for failing to specify the *exact* nature of colonial-indigenous interactions regarding shared domestic space and demand to *know* whether small or large groups of indigenous people visited the site. Their demands betray a singular lack of familiarity with written sources which is not surprising since one of them, at least, has never set foot in the State Archives (R.Yates, pers. comm.).

The avowed aim of Yates and Smith to define the archaeological signature of distinct cultural groups may or may not be fulfilled. But if they are to make a significant inroad to this matter, they will have to leave fiction to others (Schrire 1994) and follow the tried and tested Popperian path of hypothetico-deductive reasoning.

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NOTES

DUTCH BRASS BUTTONS FROM THE CAPE TO THE MARICO

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Brass trinkets and small goods made of other metals were much in demand as items of barter in the Cape for several centuries after the first European colonisation. In an account published in the late eighteenth century Mentzel commented on the worth of such goods, the relative economic advantage that this trade represented to the colonists, and the utilitarian modification of some of the traded items by the indigenees.

> The whole agreement made by Van Riebeeck with the Hottentots that he found dwelling there rests upon the acceptance by the natives of presents at a total cost of about f1,000. One can realise what an extraordinary number of beads, cheap knives, small looking-glasses, and similar rubbishy "penny" articles can be obtained for f1,000. They valued highly small pieces of iron, whereof they made the points of their assagais, and the brass buttons that were soldered together by girdlers out of two small plates of metal are even now more acceptable to them than the cast article. For if the former were put in the fire the solder would melt and the two plates would separate and provide two pieces of brass (Mentzel 1785:49-50).

Excavations at the slave lodge on the Dutch estate of Vergelegen have produced several examples of these brass buttons, in a variety of sizes. Some of them are intact, while others have separated accidentally, or have been separated deliberately, into two parts (Fig. 1). The lower part incorporates a metal eye for sewing the button to a garment, while the upper part becomes a loose hollow brass dome. These buttons found in the remains of the eighteenth century slave lodge provide a satisfying corroboration of Menzel's descriptions of their occurrence at the Cape. But they also provide a clue to the identity of a class of artefact found distributed from the Cape to the Transvaal.

Two hollow, domed brass artefacts were recovered recently by Mr Jan Boeyens (UNISA) from two late Iron Age sites in the Marico district. One came from a depth of 30 to 40 cm in a midden on site 2526 AC2 on Kleinfontein or Olifantspruit (with dates for the site ranging from 180 to 200 BP), and the other from a hut

Fig. 1. Four brass buttons from Vergelegen slave lodge, one of them disassembled to show the hollow upper dome (scale in mm).

Fig. 2. Domed brass ornament from Kleinfontein in the Marico district (scale in mm).

floor on site 2526 CB9 Magozastad 248 JP (with dates ranging from 400 to 210 BP) (J. Boeyens pers. comm.). They are illustrated in Figures 2 and 3. They are of two different sizes, and both have two holes punched through opposite sides of their rims, presumably for attachment to a garment or for suspension. The diameters, about 16 mm and about 10 mm respectively, correlate with the sizes of the domes of the Vergelegen buttons and the curvatures are the same. We are confident in identifying these domed brass ornaments as the perforated tops of

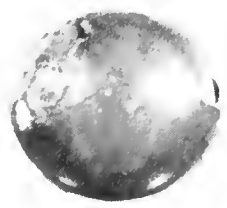

Fig. 3. Domed brass ornament from Magozastad in the Marico district (scale in mm).

disassembled Dutch buttons like the ones found in the Vergelegen slave lodge. Their masses were 0,84 grammes and 0,41 grammes and they were relatively uncorroded.

Similar domed brass artefacts, some with single and some with double perforations, have been found in the upper layers of several Later Stone Age sites in the western Cape coastal region and the Cederberg (A.B. Smith pers. comm.; J.E. Parkington pers. comm.). It is tempting to speculate that refashioned brass buttons were traded from the Cape, through Namaqualand, to the northwestern Transvaal and that these characteristic ornaments might be clear indications of such trade. It is likely that others have arrived at similar conclusions already but this note is intended to alert archaeologists to the identification of these brass domes as reworked buttons in the hope that more examples might be forthcoming.

ACKNOWLEDGEMENTS

We thank Jan Boeyens (UNISA) for permission to publish the description of the artefacts from the Marico. Gavin Evans took the photographs.

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PRELIMINARY RESULTS FROM MUMBWA CAVES, CENTRAL ZAMBIA*

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A combined team representing Zambia's National Heritage and Conservation Commission, the National Museum, Livingstone, and the universities of Bristol and Oxford spent three weeks in June 1993 examining the deepest deposits of the main cave at Mumbwa, central Zambia (Fig. 1). The complex of caves and rock shelters generally known as Mumbwa Caves has been investigated at irregular intervals since 1925 (Macrae 1926; Dart & Del Grande 1931; Clark 1942; Savage 1983). The 1930 excavations of Dart & Del Grande discovered a quartz based Middle Stone Age assemblage (see Volman 1984:184-5) overlying bedrock at a depth of nearly seven metres. The objective of the 1993 investigation was to assess the extent of this earliest deposit and to collect sediment samples for dating and environmental analysis.

Three test pits were sunk, two to the north of Dart & Del Grande's central pit - squares H6 and G4 - and the third cutting into the surviving section of the central pit - square E9 (Fig. 2). The two northern test pits proved to be largely sterile, with no evidence of occupation overlying bedrock. The excavation of E9 confirmed Dart & Del Grande's basic sequence with MSA material appearing beneath the sterile 'red clay' of the central pit (Fig. 3).

Bedrock was not reached in E9 as the original section face appears to have collapsed at a depth of 6 metres and been replaced by later infill. An unfortunate consequence of the collapse was the rapid reduction in area of intact lower deposit available for excavation in E9. At best, the deposit extended across 0,50 m of the one metre square decreasing to less than 150 mm near the base.

Given this limitation, the high concentration of largely quartz debitage from lower E9 is impressive (Table 1). It suggests that further excavation of the central pit area could yield the largest stratified sample of early MSA known from Zambia to date. The retouched pieces are too few in number to make firm typological comparisons, but the presence of small flake tools and the

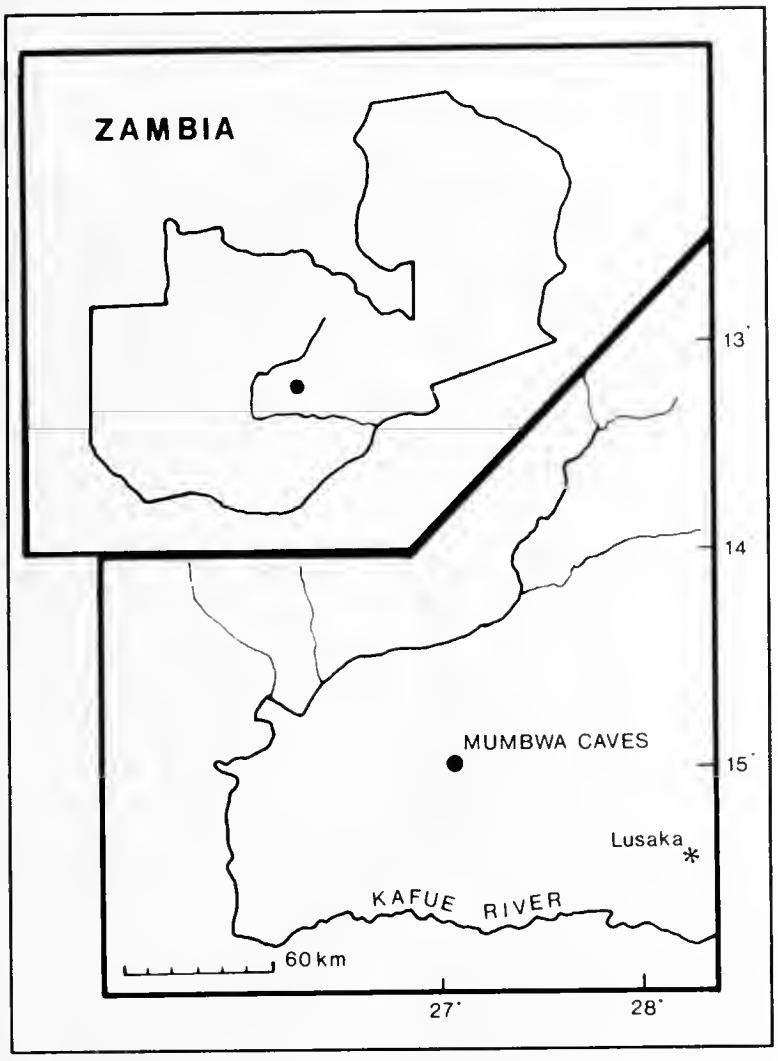

Fig. 1. Location map of Mumbwa Caves, central Zambia.

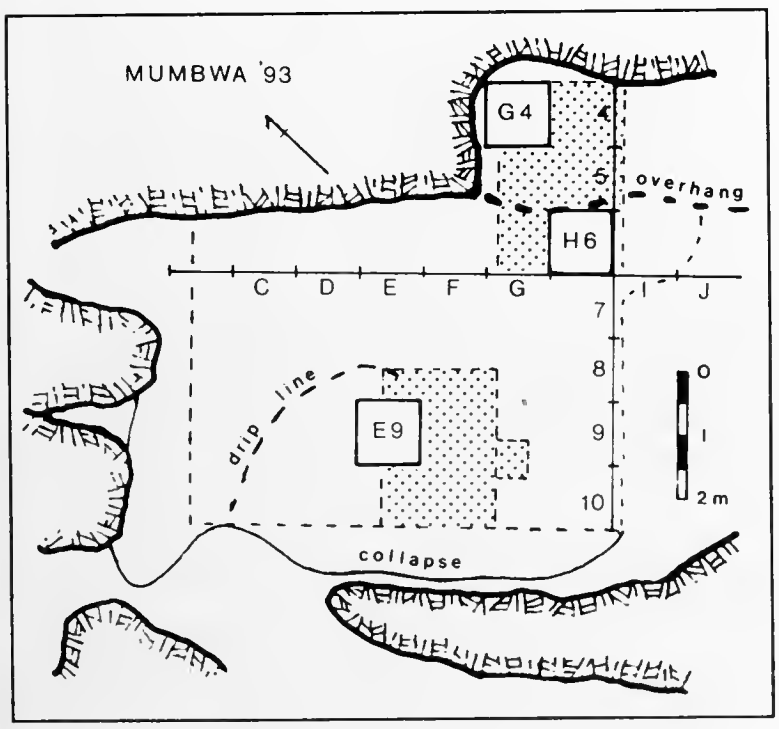

Fig. 2. Plan view of the three test pits excavated in the main cavern in 1993. The stippled areas are the deepest portions of the 1930 excavation, represented by a dashed line. E9 cuts into the central pit, and G4 and H6 are in the northern extension of Dart & Del Grande.

predominance of disc cores (Fig. 4) is suggestive of the Charama industry as known from Zimbabwe and Zambia (Volman 1984:185).

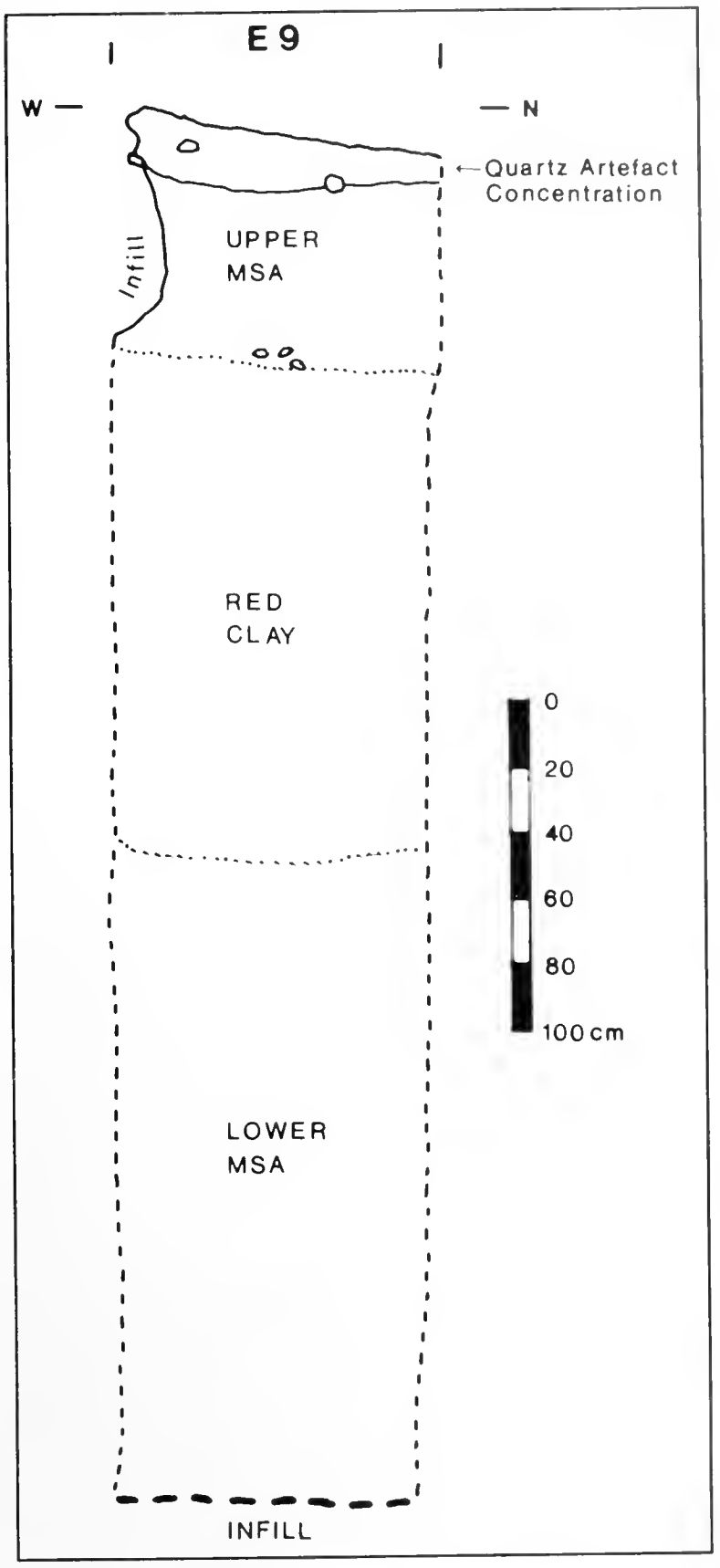

Fig. 3. Section of E9 showing major stratigraphic units.

The preservation of macro and microfauna is good throughout the Mumbwa sequence, including the lower MSA deposit. Of particular interest is the recovery of two human radius fragments from the base of E9, near the junction of the intact deposit and the infill. The fragments do not appear to belong to the same bone and may represent two individuals. These finds raise the prospect of further human remains to come from this very earliest occupation of Mumbwa.

Sediment samples were taken for optically stimulated luminescence dating. The results will be reported along with a full sedimentological analysis of the red clay

Table 1. Artefact frequencies and percentage frequencies for the upper MSA of E9 (E922-E937), the red clay (E938-E9316) and the lower MSA deposit (E9317-E9324).

Locus	Shatter	Flakes	Cores	Retouched	Utilized
E922	85	235	6	6	3
E923	173	275	15	6	0
E924	67	158	6	2	0
E931	77	85	6	1	0
E932	44	29	8	0	0
E933	27	49	0	2	0
E934	27	64	5	0	0
E935	12	47	0	0	0
E936	17	52	0	0	0
E937	16	34	1	0	0
TOTAL	545	1028	47	17	3=1640
% Total	33.23	62.68	2.87	1.04	0.18
E938	0	33	0	0	0
E939	5	14	0	0	0
E9310	0	8	0	0	0
E9311	3	11	0	0	0
E9312	2	6	0	0	0
E9313	4	8	0	0	0
E9314	2	18	2	0	0
E9315	2	11	0	0	0
E9316	0	13	1	0	0
TOTAL	18	122	3	0	0=143
% Total	12.59	85.31	2.10		
E9317	26	121	3	0	0
E9318	45	116	5	2	0
E9319	62	160	8	3	0
E9320	93	194	17	2	2
E9321	59	86	4	1	0
E9322	32	170	3	0	0
E9323	107	391	19	2	0
E9324	87	267	19	2	0
					0
TOTAL	511	1505	78	12	2=2108
% Total	24.24	71.40	3.70	0.57	0.09

deposit late in 1994. Charcoal for dating was collected from H6 and E9, but given the possibility of infill contamination in E9 a full dating programme will be postponed until additional samples are excavated from secure contexts. The presence of teeth from large mammals in the lower MSA as well as burnt stone suggests that ESR and TL dating may be feasible,providing independent checks on the chronology of Mumbwa.

This brief testing of Mumbwa Caves confirms not only the stratigraphic sequence as described by Dart & Del Grande but also reaffirms the site's potential as a prime source of information about the early MSA of south central Africa.

ACKNOWLEDGEMENTS

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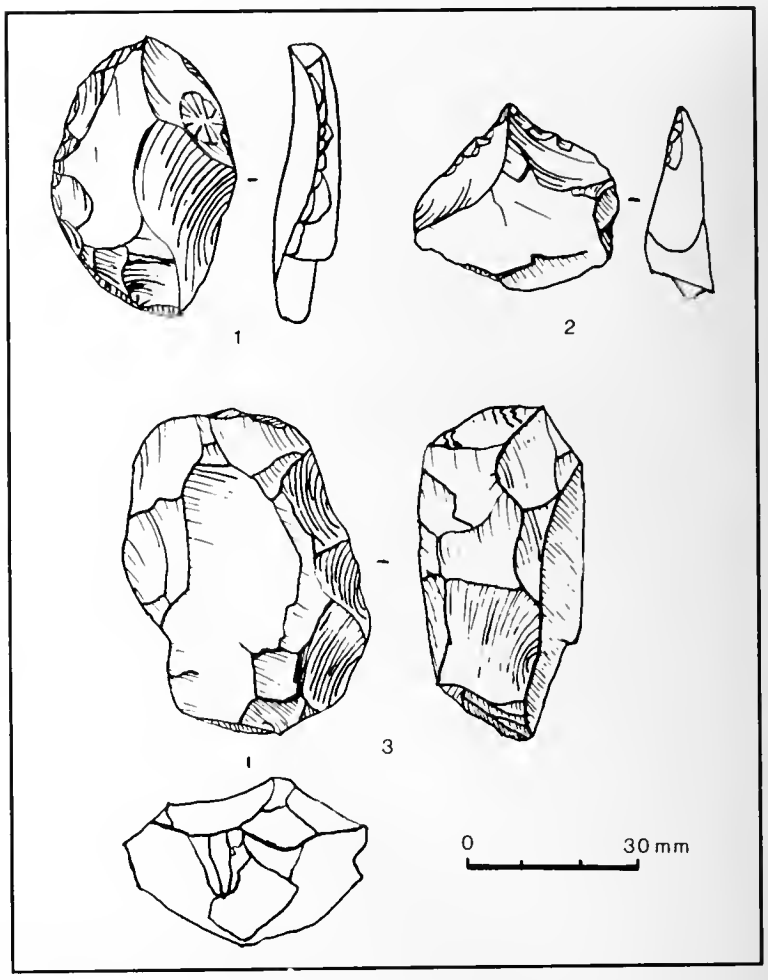
Fig. 4. Artefacts from the lower MSA of E9 - all quartz. 1: sidescraper; 2: awl 3: prepared core, possibly Levallois technique.



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LETTERS AND COMMENTS

EARLY IRON AGE IN THE EASTERN CAPE: A RESPONSE BY MAGGS TO BINNEMAN *ET AL.*

TIM MAGGS

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Congratulations on your published note on the Kulubele Early Iron Age site on the Kei River (Binneman *et al.* 1992). It is nice to see confirmation of the first millennium agriculturist settlement as far south and west as this, as well as to note the locality inland in a major river valley. I would agree that the illustrated pottery resembles Msuluzi material from Natal (Maggs 1980a) which is of a similar age.

There is just one point in the note with which I would like to quibble, namely the first sentance which claims that "Until recently the southerly limit of Early Iron Age settlement was thought to be along the Transkei coast ..".

As early as the 1960's Rudner (1968) reported pottery similar to Schofield's NC3 reaching as far west as the Port Alfred - Bathurst area. Derricourt (1977) recorded sites of his Shixini Ware as far west as the Chalumna River in the Ciskei, recognising its similarity to NC3. From as early as the 1970s NC3 and Shixini have been recognised as belonging to the Early Iron Age (Maggs 1973) and we have been regarding the Chalumna River, which is 100 km south-west of the Kei, as the southerly limit of known EIA settlement (eg. Maggs 1980b).

The idea that EIA occupation might extend as far as the Great Fish River (Binneman *et al.* 1992) is very tempting, especially in view of the place that this river holds in the colonial history of the eastern Cape. Is it not time that we took another look at the pottery referred to by Rudner (1968) from west of the Chalumna River? Perhaps we can extend the limits of first millennium agriculturist communities another 100 km along the coast. How about our Albany Museum colleagues picking up the challenge?

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A RESPONSE TO MAGGS: DERRICOURT MISINTERPRETED

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We take your point about the distribution of potsherds with Early Iron Age (EIA) attributes as far west as Port Alfred, and agree that we should have phrased the first sentence of our report (Binneman *et al.* 1992) slightly differently. Our concern, however, was with providing a short report on a new site. We were aware of the material cited by Maggs (above) but we were intending to comment on it in greater detail in a more comprehensive paper dealing with evidence for the Early Iron Age in the eastern Cape.

We should like to take this opportunity to discuss the misconception which has been generated in the literature

around the nature of the potsherds from Derricourt's Chalumna excavations (1977). In your letter you say "Derricourt (1977) recorded sites of his Shixini ware as far west as the Chalumna River in the Ciskei, recognising its similarities to NC3". A careful examination of his published account suggests that there is insufficient evidence to support such an interpretation. Derricourt named the pottery from his Chalumna excavations "Chalumna Ware" (Derricourt 1977:130, 131:table 17, 132:table 18, 133) for the following reasons, "The pottery is unusual compared with certain other coastal assemblages in several ways: **the absence of any incised or impressed decorations** or stratified burnish places it outside the known coastal assemblages and most inland groups. There is no assemblage in the region clearly parallel" (*ibid*:98, our emphasis). On page 130 he repeats in his description of Chalumna Ware, "The pottery is undecorated". Furthermore, it is only of medium thickness, and in table 18 (*ibid*:132) he notes that the rims do not conform to the types common to Shixini Ware. He clearly distinguishes between Chalumna Ware and Shixini Ware. There is no compelling evidence to suggest that the excavated site at Chalumna River represents an Early Iron Age site, indeed the date of 510±45 BP (Pta-932) for the pottery horizon indicates that it is not.

The confusion regarding the exact nature of the ware from the Chalumna excavations may have arisen as a result of a number of unfortunate juxtapositions in Derricourt's publication. Drawings of Early Iron Age potsherds (*ibid*: 130 fig. 33), labelled Shixini Ware are positioned next to his description of Chalumna Ware creating the impression that these sherds came from his excavations. However, these illustrated potsherds are from his sites 570 and 686, which refer respectively to the site of Shixini in the Willowvale district and to Lambasi in the Lusikisiki district.

Apart from the excavated midden at Chalumna, which he named CHE, Derricourt also recorded (but did not excavate) a number of other shell middens to the south-west of the river mouth, one of them being site 586. This site, with cattle and sheep/goat remains, he notes "also has very different pottery from CHE; it has ware close to that we link in this volume to Iron Age by parallel in type with inland sites and decoration seen up coast with this temper parallel to Natal Iron Age" (*ibid*:108). In other words the pottery from site 586 represents his Shixini ware from the Chalumna River. In his description of the pottery he mentions 133 plain body sherds but no decorated sherds. It is clear that he sees the affinities between his surface collections from site 586 at Chalumna and the EIA material from Natal to be in the **temper** of the pottery. Despite the fact that the site contained no decorated pottery it was, however, listed as one of his Shixini sites (*ibid*:130). His other Shixini sites on the Ciskei (west of the Kei River) coast are Ncera Mouth, Cove Rock and Gonubie Springs. We have examined the potsherds from these sites (they will be discussed in a later paper) and do not believe that there is sufficient evidence to suggest that they represent EIA settlements.

Numerous potsherds which could be ascribed to the EIA have been collected in the past from the coast west of the Kei River (Rudner 1968). However, isolated fragments of EIA pottery, some found as far west as Alexandria, do not necessarily represent Early Iron Age (or early agriculturist (Maggs 1992)) settlement. Very little is known about the nature of the occupation along the Ciskei section of the Eastern Cape coast during the first millenium AD. Historical accounts mention that the Gonaqua Khoikhoi occupied this region but we have yet to determine how, if at all, their archaeological signature may be distinguished from the Early and Later Iron Age peoples. Extensive interaction and trade between the various inhabitants of the Eastern Cape cannot be ruled out as a possible explanation for the widespread distribution of EIA potsherds west of the Kei River. In our paper (Binneman *et al.* 1992) we emphasised the significance of the fact that Kulubele is in fact an *in situ* EIA settlement whereas there is no similar hard evidence from the coast.

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